

New or Noteworthy Species of Orchids from the American Tropics

BY

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NEW species of orchids from tropical America receive attention in this paper. The sequence of the genera follows closely the system proposed by Pfitzer in Engler and Prantl's "Die natürlichen Pflanzenfamilien." Unless indicated otherwise, the types of the new species have been deposited in the herbarium of the senior author.

Habenaria caldensis Kränzl. in Engl. Bot. Jahrb. 16 (1892) 128.

Habenaria paludosa Rodr. Gen. et Sp. Orch. Nov. 1 (1877) 153.

Several specimens of a tall *Habenaria*, from British Guiana mostly in fruit, are undoubtedly referable to this Brazilian species. They differ, however, from the type in the following particulars.

Stems up to 10.78 dm. tall, instead of a maximum of 6 dm. Leaves about ten in number, instead of two to four. Raceme about 14 cm. long, instead of 3–10 cm. Anterior lobe of the petals a little shorter than the posterior. The reverse is true of typical *Habenaria caldensis*, but the degree of relative length apparently is a variable factor. The labellum is a little smaller than typical; lateral lobes about 7.4 mm. long, instead of 9–11 mm.; middle lobe about 5.8 mm. long, instead of 7–8 mm.

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BRITISH GUIANA, Rockstone, dense upland forest, along the railroad track, *H. A. Gleason 594, 673, and 738*, July 15 to August 1, 1921. (Herb. N. Y. Bot. Gard.)

***Vanilla latisegmenta* A. & S. sp. nov.** Herba scandens. Caulis in sicco striato-angulatus. Folia elliptico-ovata, acuminata, sessilia. Radix singula oppositifolia. Inflorescentiae axillares, pauciflorae. Flores pro genere mediocres. Sepala lanceolata, acuminata. Petala similia. Labellum basi columnae breviter adnatum, leviter trilobatum, margine valde plicato. Discus lineis crassis internerviis atque lamella lata per medium ornatus. Columna gracilis, glaberrima.

Stem scandent, flexuous or arcuate, striate-angulate, smooth, 2.4 mm. in diameter, internodes 4–6.5 cm. long (a single terminal internode only 1 cm. long), opposite each leaf a short stout fibrous root which is longitudinally sulcate when dry. Leaves elliptic-ovate, about 13–20 cm. long, 6.3–8.7 cm. wide, rather abruptly acuminate, sessile, many-nerved with cross reticulations, shining. Inflorescences axillary, short, about 5-flowered. Rachis stout, strongly fractiflex, 4–5 cm. long. Floral bracts triangular-lanceolate, concave, amplexicaul, 1.5 cm. or less long. Flowers medium-sized for the genus. Pedicellate ovary of mature flowers 4–4.6 cm. long. Lateral sepals broadly lanceolate, 4.6–5.2 cm. long, 1.75–2.1 cm. wide, narrowed to the acute apex which is very oblique, 13-nerved. Dorsal sepal similar, about 1.55 cm. or more wide below, sometimes thicker in texture through the longitudinal middle of the lower three-fourths, 11-nerved. Petals elliptic-lanceolate, lightly oblique, about 4.6–4.9 cm. long, 1.5–1.8 cm. wide, acute and very obliquely bilobed at the apex, thickened through the centre with a longitudinally central groove on the outer surface, 11-nerved. Labellum at base adnate to the column for about 6 mm., when expanded roughly hexagonal in outline, about 4.4 cm. long and as wide above the middle, free portion rounded below then flabellate-dilated to a lightly 3-lobed apex with its anterior margins strongly plicate, apex abruptly mucronate. Disc marked by a conspicuous broad central fleshy band which is some-

times 3-ridged at the base and indistinctly 5-ridged below the middle, the ridges coalescing into a central fleshy fascia that narrows into three broad fleshy approximate keels extending nearly to the apex, on each side of the central band closely lined in the lower and middle portions with numerous fleshy interneural ridges. Column slender, glabrous, about 2.6 cm. long, arcuate.

Dried (but matted) flowers show even larger measurements, the sepals being about 5.5 cm. long and 2 cm. wide.

Vanilla latisegmenta is allied to *V. inodora* Schiede, but has broader perianth segments. *V. guianensis* Splitg. has narrower leaves, many-flowered racemes, narrower flower parts, and a distinctly 3-lobed lip.

BRITISH GUIANA, Upper Rupununi River, near Dadanawa, Lat. 2° 45' N., *J. S. de la Cruz* 1404, May 29, 1922. "Flowers white." (TYPE in Herb. Ames No. 22973); *J. S. de la Cruz* 1424, May 31, 1922. "Flowers white and yellow.": Rockstone, lowland forest, *H. A. Gleason* 526, July 13-30, 1921.

Pelexia Funckiana (A. Rich. & Gal.) Schltr. in Fedde Repert. 15 (1918) 197 (as *Funkiana*).

Spiranthes Funckiana A. Rich. & Gal. in Ann. Sci. Nat. ser. 3, 3 (1845) 32.

Pelexia Pringlei Fernald in Proc. Am. Acad. 35 (1900) 562.

Pelexia guatemalensis Schltr. in Fedde Repert. 15 (1918) 197.

Duplicate material of the type collection of *Pelexia Pringlei* Fernald preserved in Herb. Ames proves, both in general appearance and in all measurements, to be identical with *Spiranthes Funckiana* A. Rich. & Gal.,—a true *Pelexia*,—as shown by records from the Herbarium of the Museum of Paris. The types of both plants, moreover, were collected near Jalapa, Mexico, at approximately the same altitude.

Furthermore, the typical *Pelexia Pringlei* shows almost exact identity with a drawing of *P. guatemalensis* Schltr., as well as with the description of that plant. Schlechter, in his

treatment of the latter species, says: "Die Art ist nahe verwandt mit *P. Funkiana* (A. Rich. & Gal.) Schltr. (*Spiranthes Funkiana* A. Rich. & Gal.), hat aber grossere Blüthen in dichterem Traube, gewimperte Petalen und ein spitzeres Mentum." Regarding the first and last discrepancies, photographic evidence refutes the statements, while the "dichterem Traube" and "gewimperte Petalen" are evident in *Pelexia Pringlei*. A distance of a little over one hundred miles separates the stations of these Mexican and Guatemalan plants.

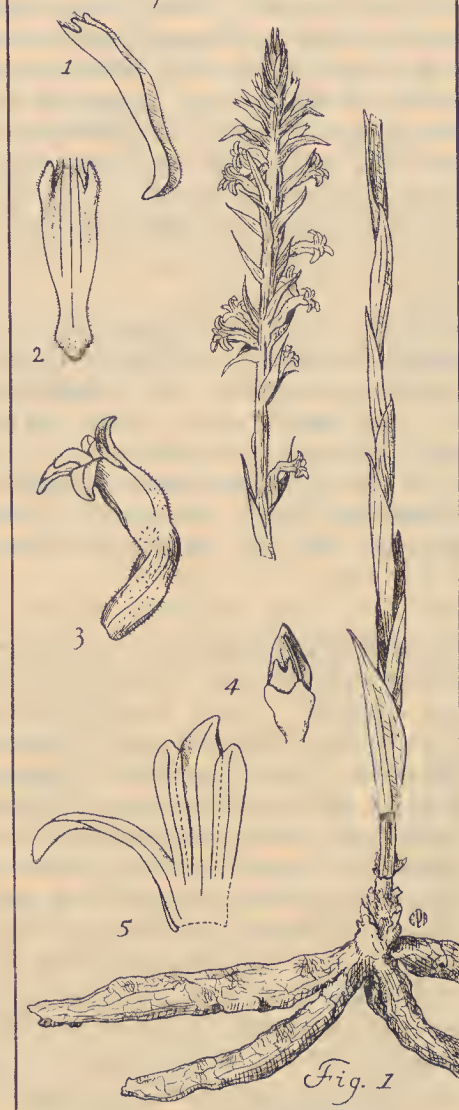
From all available records, therefore, it appears that *Pelexia Pringlei* Fernald and *P. guatemalensis* Schltr. are conspecific with *P. Funkiana* (A. Rich. & Gal.) Schltr.

***Spiranthes subpandurata* A. & S. sp. nov.** Herba terestris, aphylla. Radices fasciculatae, magnae, tomentosae. Caulis vaginis numerosis imbricantibus obtectus. Spica terminalis, superne densa. Flores albidii. Sepala ligulata, acuta, basi ipsa connata. Petala lincaria, apice valde obliquo. Labellum anguste pandurato-lanceolatum, acutum, margine basali bicallosum. Columna generis.

Plant slender, leafless, about 17.5 cm. tall (the upper part of the erect spike very immature and hence contracted). Roots large, fleshy, fasciculate, 3.5-6 cm. long, up to 5.5 mm. in diameter, tomentose. Peduncle below the inflorescence about 10.7 cm. long, invested and mostly concealed by eight imbricating loose sheaths the lower portion of which is tubular and scarious and the free portion acuminate, the lowermost and largest sheath 2.5 cm. long. Inflorescence 6.4 cm. long, about 1.3 cm. in diameter, very loosely flowered below, dense above. Rachis glandular-pubescent. Floral bracts, lowermost exceeding the flower; upper ones subequaling the flower or shorter. Ovary nearly sessile, very shortly glandular-pubescent. Perianth segments strongly recurved above like those of *Spiranthes lucayana* (Britton) Cogn. Lateral sepals obliquely ligulate, abruptly acute, lightly connate at the oblique base and connate with the dorsal sepal; free portion 4.2 mm. long on the posterior margin and a little longer on the anterior, 1.2 mm. wide at the base,

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subpandurata A. & S.



with but one distinct nerve. Dorsal sepal 4.8 mm. long inclusive of the connate basal portion; free part about 4.2 mm. long, about 1.1 mm. wide above the middle, abruptly acute, with but one distinct nerve. Petals linear, adherent to and slightly shorter than the dorsal sepal, free part about 3.4 mm. long, obtuse or acute at the very oblique apex, 1-nerved. Labellum shortest of the perianth segments, narrowly pandurate-lanceolate, acute, lightly constricted just below the apex, 4.2 mm. long, about 1.6 mm. wide near the middle, base unguiculate, lower portion with a pair of conspicuous fleshy nipple-shaped callosities. Disc 3-nerved, the anterior margins minutely cellular-ciliolate. Column short, with a bifid rostellum.

An allied species is *Spiranthes guyanensis* (Lindl.) Cogn., which has smaller flowers and a different lip. [Fig. 1: habit life size. 1, labellum, side view $\times 7$. 2, labellum, front view $\times 7$. 3, flower, side view $\times 4$. 4, column with anther $\times 7$. 5, petals, dorsal sepal and one lateral sepal $\times 6$.]

PANAMA, Upper Chagres River Range, C. W. Powell 377, January–February 1924. Terrestrial in woods where sun shines sparingly. Flowers white. (TYPE in Herb. Ames No. 27954.)

***Stenorrhynchus bracteosus* A. & S. sp. nov.** Herba terrestris. Folia rosulata, oblique ovata, longipetiolata. Caulis vaginis paucis ornatus. Spica brevis, densa. Bractae flores multo superantes. Sepala parte inferiore connata, lanceolata, trinervia. Petala spathulato-lineariter. Labellum lanceolatum, prope medium dilatatum. Columna generis.

Plant terrestrial. Roots fasciculate, stout, densely villous-lanuginose, 5–8 cm. long, about 5 mm. in diameter. Stem about 33 cm. long (from the sheathed base to the apex of the arcuate inflorescence), mostly glabrous, lanuginose below the inflorescence, sheathed below by the imbricate bases of the petioles, with five loose membranaceous sheaths above, the lower of which are tubular at base and lanceolate above (the largest 7.2 cm. long). Leaves rosulate, seven in our specimen; petioles 9–11.5 cm. long, slender and channelled above, gradually dilated below into a membranaceous

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clasping base; blades ovate to elliptic-ovate, 8.5–9.5 cm. long, 4.2–5 cm. wide (the uppermost 6.15 cm. long, 2.6 cm. wide), oblique, abruptly acute, rounded at base, membranaceous, 11-nerved with five of the nerves more conspicuous. Inflorescence short, dense, about 5 cm. long, 4 cm. across in the dried specimen. Floral bracts 3.7 cm. or less long, the lower far surpassing the flowers, lanceolate, acuminate. Ovary and lower part of the flower densely pubescent outside. Perianth segments parallel below and somewhat spreading above. Sepals all connate throughout their lower half. Lateral sepals about 1.9 cm. long, fleshy; free portion triangular-lanceolate, 1 cm. long, complicate at the tip, dorsally carinate, 3-nerved. Dorsal sepal similar, thinner, with an obtuse tip. Petals adherent to the dorsal sepal and connate with it at the base; free part about 12 mm. long, 2 mm. wide above the middle, obliquely spatulate-linear, little shorter than the dorsal sepal, acutish, 3-nerved, membranaceous below, thickened above. Labellum lanceolate, simple, gradually dilated near the middle, 1.5 cm. long, 5 mm. wide where broadest, with a pair of flattened auriculate calli at the base, shortly pubescent near the base, obtusely acute at the apex, with the forward margins irregular. Column about 9 mm. long (measured dorsally to the tip of the anther), anterior face closely pubescent; rostellum stiff, the apex linear-triangular, 3 mm. long. Anther linear-oblong, surpassing the rostellum.

Stenorrhynchus bracteosus is allied to *S. speciosus* (Jacq.) L. C. Rich., but differs in its ovate leaves, very long floral bracts, and pubescent upper portion of stem rachis and ovaries. It is distinct from *S. cernuus* Lindl. in its bracts, which far exceed the flowers, and in its sessile lip. [Plate 21: habit one-half natural size. 1, petals with dorsal sepal $\times 1 \frac{2}{3}$. 2, column with anther $\times 2 \frac{1}{3}$. 3, labellum $\times 1 \frac{1}{2}$. 4, lateral sepals $\times 2$.]

COSTA RICA, Santa Clara de Cartago, C. H. Lankester 572, December 23, 1923. 7000 feet altitude. "A fairly common terrestrial—also north of Cartago on slopes of Irazu." Flowers Coral Red [Ridgway], lip yellow. Bracts brick red. (TYPE in Herb. Ames No. 28122.)

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Cranichis grandiflora A. & S. *sp. nov.* Herba medioeris sed floribus grandibus. Folium singulum ut videtur, basale, eordatum, obliquum. Seapus vaginis nonnullis or-



natus, apice eernuus et pubeseens. Sepala lateralia oblique lanceolata, aeuminata. Sepalum dorsale anguste lanceolatum, aeuminatum, acutum. Petala sepalo dorsali adhaerentia et quam illud breviora, elliptico-linearia. Labellum

cordatum, valde acuminatum; discus callo crasso V-formi excavato ornatus. Columna generis.

Plant small, but with very large flowers for the genus, about 18 cm. tall. Roots stout, fibrous, tomentose. Leaf (in our specimen) solitary, basal; petiole about 1.5 cm. long; blade cordate, 3 cm. long through the middle, about 2.2 cm. wide, oblique, abruptly acute, membranaceous when dry. Scape suberect, nodding above, provided with six tubular membranaceous sheaths, glabrous below, upper portion pubescent. Raceme rather congested, about 6-flowered. Rachis and ovaries glandular-pubescent. Floral bracts broadly ovate, acuminate, concave below, scarious. Sepals very sparsely long-hairy on the outer surface. Lateral sepals very obliquely lanceolate, 6.3–7 mm. long, about 2.3 mm. wide, acuminate, 3-nerved. Dorsal sepal narrowly lanceolate, about 8.1 mm. long, 2 mm. wide near the base, acuminate with a complicate apex, 3-nerved. Petals adherent to the dorsal sepal and slightly shorter, elliptic-linear, oblique, acute or acuminate, 2-nerved. Labellum cordate, about 5.6 mm. long in the middle, nearly as broad at the base when expanded, sharply acuminate, margins complicate at the apex, concave in the middle by reason of a large excavated V-shaped fleshy callus which is densely cellular-pubescent and terminates near the apex of the labellum. Column short and inconspicuous.

Cranichis grandiflora is extraordinary on account of its very large flowers. It is vegetatively similar to *C. diphylla* Sw. and to *C. pilosa* Fawc. & Rendle. [Fig. 2: habit life size. 1, labellum with column and anther $\times 5$. 2, flower, front view $\times 3 \frac{1}{2}$.]

CUBA, Sur de Oriente y Pico Turquino, Sierra Maestra, Hno. Leon 10761, July 1922. (TYPE in Herb. N. Y. Bot. Gard.)

Ponthieva unguiculata A. & S. *sp. nov.* Herba gracilis. Folia basalia, rosulata, petiolata, aliquando folium singulum in caulis parte inferiore; lamina ovato-elliptica, acuta. Scapus pubescens. Racemus laxe pluriflorus. Flores parvi, in sicco membranacei. Sepala oblongo-ovata vel

lanceolato-elliptica. Petala longe unguiculata, oblique triangularia. Labellum longissime unguiculatum; lamina reniformis trilobata, lobo medio minore. Columna generis.

Plant slender, about 17.5 cm. tall to the tip of the apical flower. Roots fasciculate, lanuginose. Leaves basal, rosulate, two to three, 3.1–5.2 cm. long, 1.6–2.3 cm. wide, elliptic-ovate, acute, membranaceous, cuneate-narrowed to a sulcate petiole. Petiole sheathing the stem at base, the free part 1.5 cm. or less long. Scape far exceeding the leaves, gently arcuate, pubescent, especially so above, with three distant tubular sheaths of which the lowest is foliaceous. Peduncle below the raceme 8–12 cm. long. Inflorescence loose; rachis pubescent, 3.7 cm. long, 11-flowered. Pedicellate ovary spreading, pubescent. Flower very small, membranaceous. Sepals 3-nerved, sparsely villous on the outside. Lateral sepals oblong-ovate, oblique, 5 mm. long, 2.1–2.5 mm. wide, acute to obtuse. Dorsal sepal a little smaller, lanceolate-elliptic, acute. Petals with long and slender claws, obliquely triangular, about 5 mm. long (including the claw), about 2.1 mm. wide across the dilated portion, the apex truncate, the exterior angle dilated. Labellum long-clawed; claw inserted on the column, channelled, about 2 mm. long; lamina reniform in outline, 3-lobed, cordate at base, about 2 mm. long, 2.2 mm. wide when spread out; lateral lobes rounded-dolabriform, spreading; middle lobe one third smaller, ligulate, rounded, and slightly dilated above. Column about 2.9 mm. long.

The nearest allies of *Ponthieva unguiculata* are *P. montana* Lindl. and *P. Weberbaueri* Schltr. *P. montana* is differentiated by shorter clawed petals, ciliate sepals, and dissimilar lip. *P. Weberbaueri* has much larger flowers and a differently shaped labellum.

BOLIVIA, Yungas, *H. H. Rusby* 2767, 1885. 6000 feet altitude. (TYPE in Herb. Acad. Nat. Sci. Phila.)

Malaxis pusilla A. & S. *sp. nov.* Herba pusilla. Caulis basi bulbosus, monophyllus. Folium elliptico-ovatum, patens. Scapus gracilis, quadrialatus. Racemus brevis, laxus. Sepala lateralia obliquissime elliptico-ovata, apice

rotundata. Sepalum dorsale lanceolato-ovatum, acutum. Petala linearia, sepalis breviora. Labellum hastato-cordatum, basi conspicue auriculatum, prope apicem utrinque leviter constrictum. Gynostemium minutum.

Plant very small, 7.7 cm. tall including the swollen ovoid base about 8 mm. long, bearing a single leaf and an enveloping sheath. Leaf sheathing the stem by a long petiole which is scarious, about 2.2 cm. long; blade elliptic-ovate, spreading, about 3.2 cm. long, 1.5 cm. wide, obtuse or acutish at the apex, narrowed at the base, many-nerved with seven more conspicuous nerves, the mid-nerve sulcate above and prominently carinate beneath. Scape slender, glabrous, 4-winged. Raceme short, erect, terminal, 2 cm. long, about 12-flowered. Floral bracts lanceolate-triangular, acuminate, apparently hyaline, concave near the base. Lateral sepals very obliquely elliptic-ovate, about 3.3 mm. long, about 2 mm. wide, rounded at the apex, narrowed below to a base which is very shortly connate with the paired sepal, 3-nerved. Dorsal sepal lanceolate-ovate, 3.5 mm. long, 2 mm. wide below, acutish, 3-nerved. Petals narrowly linear, gradually broader toward base, about 3 mm. long, 1-nerved. Labellum hastate-cordate, conspicuously retrorse-auriculate; auricles triangular-rounded, about 1.8 mm. long; lamina triangular, 3.5 mm. long, acute or obtuse, with a slight constriction near the apex on each side, 5-nerved. Column minute, apparently bilobed.

Malaxis pusilla seems to be without near allies. [Plate 23: habit slightly enlarged. 1, petal $\times 6$. 2, flower, front view $\times$ about 4.]

CUBA, Sur de Oriente y Pico Turquino, Sierra Maestra, Hno. Leon 10762, July 1922. (TYPE in Herb. N. Y. Bot. Gard.)

Physosiphon minutiflorus A. & S. *sp. nov.* Herba epiphytica. Caules vaginis scariosis omnino obtecti, monophylli. Folium erectum, oblongum, obtusum, coriaceum. Inflorescentia densiflora, secunda. Flores minutissimi. Sepala parte inferiore connata, partibus liberis ovato-lanceolata. Petala multo minora, lanceolata. Labellum in circuitu

suborbiculare, apice trilobatum; lobis lateralibus semi-orbicularibus, sublobatis; lobo medio minore.

Plant caespitose, 19 cm. tall. Roots numerous, fibrous, glabrous, very slender. Stems 3-8.5 cm. long, entirely concealed by three sheaths, monophyllous. Sheaths tubular, loose, membranaceous when dry. Leaf erect, oblong; lamina 6.25-9 cm. long, 8-11 mm. wide, obtuse to broadly rounded at the apex, coriaceous, the mid-nerve conspicuously carinate beneath, cuncate-narrowed to a sulcate petiole about 1 cm. long. Inflorescence solitary, about 12 cm. long, arcuate, subequaling the leaf, secund, densely many-flowered, especially above, base of the peduncle clasped by a rugose sheath 1.4 cm. long. Floral bracts infundibuliform, exceeding the ovary. Flowers minute, tubular-campanulate, as usual in the genus, about 2.4 mm. long. Sepals all connate for 1 mm. or less; free portion ovate-lanceolate, erect and parallel, 3-nerved. Petals very minute, lanceolate, obtuse, 1-nerved, about .9 mm. long. Labellum suborbicular in outline, about 1 mm. long, sharply 3-lobed at the apex; lateral lobes relatively large, semiorbicular, irregularly lobulate above the middle; middle lobe relatively small, triangular-ovate, broadly rounded at the tip. Disc 3-nerved, a pronounced transverse thickening with a posterior depression at the base. Column minute, provided with a broad dentate wing at the apex.

There appears to be no near ally of this minute-flowered species. [Plate 22: habit $\times$ about 2. 1, flower, side view $\times$ 6. 2, dorsal sepal $\times$ 9. 3, column and labellum, side view $\times$ 12. 4, labellum $\times$ 18. 5, lateral sepals $\times$ 9. 6, column $\times$ 18. 7, petal $\times$ 12.]

PANAMA, Province of Chiriqui, Caramillo, C. W. Powell 345, October 1923. 5000 feet altitude. "Grows on fallen trees and stumps. Medium sunlight. Flowers pale greenish white." (TYPE in Herb. Ames No. 27298.)

Physosiphon obliquipetalus A. & S. *sp. nov.* Herba gracilis, caespitosa. Caulis vaginis inconspicuis arcte ornatus, unifolius. Folium erectum, lanceolato-oblongum, coriaceum, crassum in vivo, medio acute sulcatum. Inflo-

rescentiae singulae vel binae, folium superantes. Racemi breves, secundiflori. Sepala in tubum connata, omnia unicarinata. Petala minuta, obliquissime obtriangularia. Labellum minutissimum, triangulari-ovatum, concavum, basi callo transverso ornatum.

Plant slender, caespitose. Roots numerous, fibrous, flexuous, minutely puberulent, longitudinally sulcate in the dried specimen. Stems slender, monophyllous, entirely concealed by sheaths, 2-8 cm. long, about .9 mm. in diameter. Sheaths two to six (usually five to six), long, tubular, tightly clasping, with about six prominent longitudinal nerves forming angles, terminating in an infundibuliform spreading margined fimbriate apex, the uppermost sheath having a looser upper portion with more prominent lamina. Leaf solitary, erect, lanceolate-oblong, sometimes oblique or falcate, 2.2-4.3 cm. long, 3.7-7.7 mm. wide, fleshy in the alcoholized specimen, coriaceous in dried material, acute, dorsally mucronate, cuneate-narrowed to a short channelled petiole, mid-nerve sulcate above and carinate beneath. Inflorescences one or two, exceeding the leaf. Peduncle below the inflorescence filiform, 3-4 cm. long, with about four inconspicuous infundibuliform sheaths. Racemes short, secund, erect or slightly arcuate, the mature ones 2-2.8 cm. long, 7-11-flowered. Sepals all connate into a tube which is about 4 mm. long. Lateral sepals concave-saccate at the base, bidentate above, acutish at the apex, each 1-nerved and sharply keeled on the dorsal surface. Dorsal sepal a little shorter and broader than each lateral sepal, about 3.45 mm. long (from the base), obtuse, with a broadly ovate free tip about 1 mm. long, 3-nerved with the mid-nerve carinate, especially at the base. Petals minute, very obliquely obtriangular, about 1.3 mm. long, 1-nerved, very narrow at the base. Labellum very minute, broadly triangular-ovate, .9 mm. long (including the short claw), subequally wide below, concave, obtuse, 3-nerved, with a fleshy transverse keel at the base. Column minute, with a fleshy erect lobe in the rear and with a thinner but prominent triangular extension of the rear wall of the clinandrium. [Plate 22: habit life size. 1, labellum $\times$ 14. 2, petals with column and labellum

× 7. 3, petal, spread, with column and labellum × 7. 4, flower, side view × 6. 5, flower, torn open to show parts × 6.]

Physosiphon obliquipetalus is allied to *P. Cooperi* Ames, but it has far different petals and lip.

COSTA RICA, Cartago, Santa Clara, *C. H. Lankester* 680. 6500 feet altitude. (TYPE in Herb. Ames No. 28178.)

Stelis Alfaroi A. & S. *sp. nov.* Caules secundarii conspicui, monophylli. Folium oblique lanceolatum, coriaceum. Inflorescentiae binae, dense multiflorae. Flores parvi. Sepala perlate ovata, quinquenervia, lateralalia obliqua. Petala cuneato-obovata, apice incrassata. Labellum semi-orbiculare, antice truncatum.

Plant tall and stout for the genus. Secondary stems conspicuous, over 15 cm. tall (incomplete below), about 3 mm. in diameter, monophyllous, striate-sulcate in the dried specimen, in anthesis with the fibres of long tubular sheaths. Leaf obliquely lanceolate, 15 cm. long, 3.2 cm. wide, narrowed to a more or less rounded apex (tip broken off), shortly cuneate-narrowed into a short channelled petiole which is about 2 cm. long, thickly coriaceous, with the mid-nerve sulcate above and bluntly carinate beneath. Inflorescences (of a single flowering season) two, 16–21 cm. long, arising from a prominent conduplicate lanceolate sheath which is 2.2–2.5 cm. long. Peduncle below the raceme short, about 3.5 cm. long, with a single tubular bract. Racemes suberect to arcuate-spreading, many-flowered, very dense above but loose at the base, secund-flowered. Floral bracts hyaline, subequalling the pedicellate ovary. Flowers very small, spreading, glabrous. Sepals connate at the base for nearly half their length. Lateral sepals very broadly ovate, oblique; free portion 1.6 mm. long, acute, 4–5-nerved with the nerves carinate on the outside. Dorsal sepal similar but a little larger, distinctly 5-nerved with the lateral nerves short. Petals much smaller, cuneate-obovate, about .9 mm. long, apex fleshy-thickened, especially in the centre, with three approximate nerves. Labellum similar to the petals, semiorbicular, broadly truncate in front but with a slight

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median protuberance. Disc 3-nerved, provided near the apex with a semilunar lamella. Column typical of the genus.

Stelis Alfaroii is remarkable in having very small flowers with 5-nerved sepals and peculiar labellum. It differs from its closest allies *S. Bourgeavii* Schltr. and *S. curvata* Schltr. in the form of the labellum.

COSTA RICA, La Fuente, *Anastasio Alfaro s. n.*, October 7, 1924. 1200 metres altitude. Flowers purplish green. (TYPE in Herb. Ames No. 29011.)

***Stelis carnosiflora* A. & S. sp. nov.** Herba omnino crassa. Caulis subterres, unifolius. Folium carnosum, ellipticum, apice basique rotundatum, superne obliquissime bilobatum. Inflorescentia singula, folium multo superans. Racemus multiflorus, superne densiflorus. Flores carnosi. Sepala reniformi-ovata, quinque- vel sex-nervia, sub medio connata. Petala minuta, cuneato-semiorbicularia, superne multo incrassata. Labellum et columna generis.

Plant remarkable for its dense fleshy flowers and large floral bracts. Stem stout, monophyllous, subterrestrial, over 14.5 cm. long, about 4 mm. in diameter (lower portion missing in our specimen), with several distant close tubular sheaths. Leaf fleshy, elliptic, petioled, erect; petiole about 1.5 cm. long, stout, channelled, clasping the peduncle; lamina about 9.2 cm. long, 4.1 cm. wide, rounded both at base and apex, very unequally bilobed above. Inflorescence solitary, more than twice as long as the leaf, 21.5 cm. long. Peduncle below the inflorescence short, stout, with a basal fleshy conduplicate sheath which is about 1.75 cm. long, and above this one smaller infundibuliform sheath. Rachis about 17 cm. long, the greater portion very densely many-flowered (very loosely flowered near the base). Floral bracts conspicuous, surpassing the pedicellate ovary, distichous, ovate-triangular, amplexicaul, the lowest one 9 mm. long. Flowers secund. Sepals very fleshy, connate below the middle, entirely glabrous, nearly regular, 5-6-nerved, thicker near the anterior margins. Lateral sepals reniform-ovate, about 3.5 mm. long, 4-4.2 mm. wide, subobtus, 6-nerved. Dorsal sepal

similar, slightly larger, 5-nerved. Petals minute, cuneate-semiorbicular, concave, 1.5 mm. long, 2 mm. wide, much thickened above, 5-nerved. Labellum typical of the genus, 1.1–1.5 mm. long, about 1.8 mm. wide, semiorbicular in outline, very fleshy, appearing hemispherical in natural position, with a flattened excavated anterior face, sides erect, a fleshy subbilobed thickening across the middle. Column minute, abruptly dilated and 3-lobed above.

The nearest allies of *Stelis carnosiflora* appear to be *S. curvata* Schltr., *S. Bourgeavii* Schltr., and *S. Purpusii* Schltr.; from all three it differs in its fleshy flowers, very broad sepals, large floral bracts, and 5-nerved petals.

COSTA RICA, Navarrito, *C. H. Lankester s. n.*, December 1923. "Sepals green at margin, rest dull purplish." (TYPE in Herb. Amcs No. 28775.)

***Stelis elliptica* A. & S. sp. nov.** Herba foliis latis insignis, parva. Radices numerosae, filiformes. Caules breves, graciles, vaginis tubulatis omnino obtecti. Folia elliptica, acuta, petiolata, submembranacea. Inflorescentiae folia superantes; racemi laxi. Flores perparvi. Sepala late ovata, intus pubescentia. Petala minuta, flabellato-reniformia. Labellum quadrato-ovatum, medio callo permagno completo.

Plant small, 14–15 cm. tall. Rhizome creeping (short and broken off in our specimen). Roots numerous, fibrous, filiform, flexuous, glabrous. Secondary stems approximate, monophyllous, slender, entirely concealed by two or three loose tubular scarious sheaths, 2.4–5.3 cm. long, 1-jointed below the middle. Leaf narrowly elliptic, 3.5–6 cm. long, 1.15–2 cm. wide across the middle, sharply acute at the apex, gradually narrowed into an indistinct petiole which is up to 2 cm. long, submembranaceous in the dried specimen, many-nerved, with the mid-nerve carinate beneath. Inflorescences one or two, commonly exceeding the erect petioled leaf, 8.9–9.8 cm. or less long, very slender, more or less arcuate, clothed at the base with several minute imbricating tubular sheaths and above with two distant infundibuliform sheaths. Raceme very loose, 6–8-flowered. Floral bracts

infundibuliform, acuminate. Flowers minute. Sepals very broadly ovate to rhombic-ovate, connate at their base, acute, 3-nerved, finely pubescent within near the anterior margins. Lateral sepals about 2.6 mm. long. Dorsal sepal 2.8–3 mm. long. Petals minute, rhombic-reniform, with the upper part fleshy-thickened, 3-nerved, about .8 mm. long. Labellum smaller (much narrower), ovate-quadrate, with the entire centre of the disc occupied by a large fleshy callus, minutely apiculate, with the apicule often inflexed, about .7 mm. long and a little narrower. Column minute, dilated above.

Vegetatively *Stelis elliptica* resembles a large *S. Cooperi* Schltr., while the labellum recalls that of *S. Johnsonii* Ames. *S. leptophylla* Schltr., which is apparently similar vegetatively, has smooth flowers and a different lip.

COSTA RICA, Santa Clara de Cartago, C. H. Lankester 565, December 23, 1923. "A very common sp. of the locality." Flowers greenish. (TYPE in Herb. Ames No. 28125.)

***Stelis fractiflexa* A. & S. sp. nov.** Herba parvula, rhizomate brevi. Radices fibratae, numerosae, filiformes. Caules secundarii vaginis tubulatis omnino vestiti, monophylli. Folium oblongum vel elliptico-oblongum, prominenter petiolatum. Racemi plerumque singuli, folio duplo superantes, fractiflexi. Sepala orbiculari-ovata. Petala perlate rhombica, dimidio superiore incrassata. Labellum ovatum, prope basim transverse incrassatum, antice excavatum. Columna generis.

Plant small, 12.5–14.5 cm. tall. Roots numerous, fibrous, filiform, glabrous. Rhizome short, creeping, concealed by several closely imbricating scarious fibrous sheaths, producing numerous slender roots. Secondary stems slender, approximate, 1–3.5 cm. long (usually 2.8 cm. or less), monophyllous, enveloped by two or three long tubular scarious nerve sheaths. Leaf erect-spreading, long-petioled; petiole 6–16 mm. long, slender, channelled, merging into the leaf-blade; lamina oblong or elliptic-oblong, 1.7–4.5 cm. long, 4–9.5 mm. wide, acute or obtuse, apex minutely tridenticulate, cuneately narrowed at the base,

coriaceous, many-nerved, the mid-nerve sharply carinate beneath. Inflorescence usually solitary (often with remnants of one or two old racemes), axillary, when mature twice as long as the leaf, flexuous or arcuate. Peduncle filiform, 3-5.3 cm. long, with four remote small infundibuliform scarious sheaths, a larger enveloping sheath at base. Raceme fractiflex, loosely many-flowered (twenty-six or less), 2.8-7.5 cm. long. Floral bracts scarious, the lower ones equaling the pedicellate ovaries, infundibuliform, acuminate. Flowers small, glabrous. Sepals deeply connate at the base. Lateral sepals suborbicular, narrowed to a subacute apex, about 2.8 mm. long, 2.9 mm. wide, 3-nerved, with the nerves closed. Dorsal sepal similar, very slightly larger. Petals minute, broadly rhombic, about 1 mm. long, 1.75 mm. wide, the fleshy-thickened upper half broadly rounded, 3-nerved. Labellum simple, rhombic-ovate in outline, concave, about 1.1 mm. long, subequally wide, with a fleshy transverse thickening across the lower portion, margins fleshy, obtuse, 3-nerved. Column minute, dilated above, apex 3-lobed, the middle lobe largest and bluntly triangular.

Stelis fractiflexa is allied to *S. distantiflora* Ames, but has a very different lip. The foliage recalls that of *S. petiolata* Ames, while the labellum structure suggests *S. coiloglossa* Schltr. *S. praesecta* Schltr. apparently is similar, but has broader leaves and a different labellum.

COSTA RICA, Estrella, Cartago, C. H. Lankester 791, March 27, 1924. "Flowers purple in strong light, growing in shady places may be hyaline purplish, or greenish, a very common species on the hills south of Cartago." (TYPE in Herb. Ames No. 28293.)

***Stelis minutiflora* A. & S. sp. nov.** Herba parvula. Radices numerosae, fibratae. Caules secundarii perbreves, monophylli. Folium erectum, ellipticum vel ovale, crassissimum. Inflorescentiae plerumque tres, quam folium multo breviores, dense distichiflorae. Flores minutissimi. Sepala lateralialia ovalia, dorso carinata. Sepalum dorsale simile. Petala multo minora, quadrato-labellata. Labellum ovato-

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quadratum, apice rotundatum, medio callo bilobato ornatum.

Plant small, caespitose, 4-6 cm. tall. Roots numerous, fibrous, flexuous, glabrous. Secondary stems very short, 1-17 mm. long, monophyllous, concealed by one to three loose imbricating infundibuliform sheaths which waste away in anthesis. Leaves erect (the young leaves much smaller than normal), elliptic to oval, distinctly short-petioled; petiole 2-4 mm. long, channelled; blade (of mature leaves) 21-39 mm. long, 14.5-18 mm. wide, very thick and fleshy in the alcoholized specimens, acute or obtuse at the minutely bilobed apiculate tip, rounded or subcuneate at base, sharply sulcate down the middle of the upper surface, somewhat carinate beneath, especially near the tip. Inflorescences one to four (usually three), much shorter than the leaf, only one of the clusters of racemes flowering at a time, 1.5-2.5 cm. long, very densely distichous-flowered. Floral bracts minute, infundibuliform. Flowers minute. Sepals minutely papillose within, 3-nerved. Lateral sepals oval or suborbicular-ovate, about 1.7 mm. long, abruptly acute, conspicuously carinate without. Dorsal sepal very similar. Petals very minute, quadrate-fimbriate, about .8 mm. long, 1 mm. wide, broadly truncate, lightly retuse and somewhat thickened at the apex, 1-nerved. Labellum about .9 mm. long, ovate-quadrate in outline with erect sides, a fleshy bilobed transverse thickening in the middle, broadly rounded or subtruncate at the apex, 3-nerved. Column stout.

Stelis minutiflora is allied to *S. costaricensis* Reichb.f., but lacks the mucronulate petals and acute basally bicallose lip of that species.

COSTA RICA, Cartago, Raventado, C. H. Lankester 522. 5500 feet altitude. Flowers pale greenish yellow. (TYPE in Herb. Ames No. 28774.)

***Restrepia filamentosa* A. & S. sp. nov.** Herba gracilis. Caules monophylli, vaginis scariosis omnino obiecti. Foliolum anguste ellipticum, coriaceum, in sicco erectum. Flos flavidus, rubro-striatus. Pedicellus tuberculo filiformi conspicuo praeditus. Sepala lateralia dimidio basali connata,

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lanceolata. Sepalum dorsale peranguste lanceolatum, parte superiore filiformi, apice crasso dilatato. Petala multo minora. Labellum circuitu lanceolatum, parte inferiore sub-orbiculari, utrinque lobulo triangulari ornata; parte anteriore ligulata, retusa et eroso-dentata. Columna gracilis.

Plant slender, 8.2-12 cm. tall to the tip of the erect leaf. Roots fibrous, flexuous, very slender, inconspicuously pulverulent. Stems caespitose, monophyllous, 4.4-6 cm. long, entirely concealed by five to seven imbricating loose tubular



scarious sheaths or the fibrous remains of sheaths. Leaf narrowly elliptic, shortly petioled; lamina 3.9-4.8 cm. long, 1.15-1.8 cm. wide across the middle, acute and minutely bilobed and apiculate at the apex, cuneate at the base, coriaceous, the mid-nerve conspicuous. Peduncle filiform, 3.4-4.4 cm. long, shorter than the petioled leaf. Pedicel (including the ovary) 5-8 mm. long, on its lower half a tubular bract which is mucronate at the tip, below the jointed ovary

on the anterior face of the pedicel a prominent filamentous process 2 mm. long. Perianth segments spreading. Lateral sepals 1.5 cm. long, their basal half connate, 4.5 mm. wide near the base; free portion lanceolate, 6-nerved, acutish, tips cucullate on account of the involute apical margins. Dorsal sepal about 1.5 cm. long, 2 mm. wide near the base, narrowly lanceolate above, gradually extended into a filiform channelled isthmus which is dilated into a fleshy tip, 5-nerved near the lightly concave base. Petals about 1.1 cm. long, narrowly linear, contracted into a filiform fleshy portion which is slightly dilated at the apex, 3-nerved (only the mid-nerve is prominent, as the lateral ones are very near the margins). Labellum narrowly lanceolate in outline, about 6.9 mm. long from the base of the short narrow claw to the porrect teeth at either side of the retuse apex; lamina, basal part suborbicular, with a small erect porrect falcate-triangular lobule and with two low thickened keels—one on each side—which converge slightly; anterior portion ligulate, retuse, crenate-dentate, 4-nerved, with a more or less distinct pair of parallel lines of papillae on the inner surface. Column about 4 mm. long, slender, dilated above, and broadened below into a very short fleshy curved foot.

Restrepia filamentosa is noteworthy for having the slender filament on the pedicel (observable in some species) unusually prominent. *R. Powellii* Schltr. is somewhat allied to this plant, but differs in the floral proportions. *R. subserrata* Schltr. is apparently another ally, but is a lower plant with larger, differently proportioned flowers. [Fig. 3: flower, side view $\times 2$. 1, column and labellum, side view $\times 3\frac{1}{2}$. 2, labellum, front view $\times 4$. 3, dorsal sepal $\times 2\frac{1}{2}$. 4, column $\times 4$. 5, petal $\times 3$.]

PANAMA, Province of Chiriqui, Cerro Horquita, C. W. Powell 344, October 1923. "Grows in shade on fallen trees and on logs. Flowers, ground color light yellow. Dorsal sepal has a red stripe down the centre for one half, apical yellow. Other sepals have red at base, with red stripe. Petals striped red. Column green with white cap." (TYPE in Herb. Ames No. 27297.)

Pleurothallis acrisepala A. & S. *sp. nov.* Herba parva. Caulis minutus, unifolius. Folium oblanceolatum, apice minute tridenticulatum, inferne sensim longe angustatum. Pedunculus quam folium longior, filiformis. Pedicelli fasciculi, ex axillis bractearum orientes. Sepala lateralía in laminam ovato-lanceolatam connata. Sepalum dorsale oblongo-lanceolatum. Petala multo minora, obliquissime triangulari-spathulata. Labellum oblongo-lanceolatum, utrinque minute retrorso-lobulatum.

Plant small, allied to *P. Brighamii* S. Wats. Roots fibrous, flexuous, glabrous. Stem minute, monophyllous, surrounded by fibres of sheaths. Leaf oblanceolate, 5.1–6.9 cm. long, 9.5–12 mm. wide above the middle, acutish or rounded with a minutely bilobed and apiculate tip, very gradually narrowed toward the base to an indistinct slender channelled petiole, spreading, coriaceous in the formalin material, with the mid-nerve prominently sulcate above and carinate beneath. Peduncle below the inflorescence about 8.5–9.55 cm. long, filiform, glabrous, with three remote tightly clasping tubular sheaths. Pedicels two to three, springing from the axils of closely imbricating infundibuliform sheaths which are at the summit of the peduncle. Flowers one at a time, apparently purplish. Sepals very shortly connate into a shallow cup at the base but with spreading upper portions. Lateral sepals connate into an ovate-lanceolate lamina 8.15–9.1 mm. long (inclusive of the portion adnate to the column-foot), about 4 mm. wide, sharply bidentate for about one-third of their length, with narrow acuminate teeth, bicarinate on the outer surface, 6-nerved. Dorsal sepal oblong-lanceolate, 8.5–9 mm. long, about 2.2 mm. wide, shortly but sharply acuminate, 3-nerved, unicarinate on the lower half of the outer side. Petals much smaller than the sepals, about 3.5 mm. long, very obliquely spatulate, the forward margin round-dilated in the middle then narrowed to an acuminate thickened tip, the posterior margin straight, 2-nerved. Labellum oblong-lanceolate, 4 mm. long, about 1.2 mm. wide where broadest; claw minutely auricled on each side at the base. Disc retrorsely hastate-auricled on each side below the middle and

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bicarinate there, 3-nerved, minutely and densely papillose, especially the lower third, rounded at the apex, anterior margins minutely fimbriate, the nerves keeled on the under surface especially at the tip. Column 2.5–2.9 mm. long, with a broad petaloid wing which is sharply 3-toothed at the summit.

Pleurothallis acrisepala is allied to *P. Brighamii* S. Wats., but is a larger plant with different sepals and lip. It also differs from *P. pyrsodes* Reichb. f. in having dissimilar sepals and lip.

PANAMA, without exact locality, C. W. Powell 420. (TYPE in Herb. Ames No. 29014.)

***Pleurothallis angusta* A. & S. sp. nov.** Herba medio-cris. Caulis monophyllus. Folium oblongum, acutum, basi late rotundatum, erectum, coriaceum. Pedunculi plures, uniflori. Sepala lateralialia in synsepalum ovatum omnino connata. Sepalum dorsale late oblongum, acutum. Petala falcato-linearialia, apiculata, marginibus inferioribus conspicue erosio. Labellum oblongo-ovatum, crassum.

Stem more than 10.7 cm. tall (incomplete in our specimen), monophyllous, about 1.4 mm. in diameter. Leaf erect, oblong, 12.5 cm. long, 1.65 cm. wide, shortly acute with an obtuse tip, broadly rounded at the clasping base, coriaceous, the mid-nerve sulcate above and conspicuously carinate beneath. Peduncles several (about six), short, 1-flowered, filiform, arcuate. Flowers medium-sized, perianth segments spreading. Lateral sepals connate into an ovate lamina 8.6–9.9 mm. long, about 5.1–6 mm. wide, acute, but with a rounded cucullate tip, dorsally bicarinate, very shortly connate at base with the dorsal sepal, prominently 4-nerved with two faint nerves in the centre. Dorsal sepal broadly oblong-lanceolate or oblong, 9–10.5 mm. long, 3.9–4.2 mm. wide, acute, 3-nerved, dorsally carinate. Petals linear-falcate, 6.1–6.6 mm. long, about 1.9 mm. wide below, acute, apiculate, margins cross-denticulate, the lower margins conspicuously so, posteriorly round-auricled at the base, 1-nerved, subcarinate especially at the apex. Labellum oblong-ovate or lingulate, cordate at the thickened base, 4–4.2

mm. long in the middle, about 2.7 mm. wide, broadly rounded at the apex, fleshy, margins minutely denticulate-erose (most markedly so in the middle of each side), 3-nerved, thinner in the centre, with a more or less conspicuous small lingulate concavity at the base. Column very short and stout with a minute broad foot adnate to the lateral sepals.

Pleurothallis angusta appears to be allied to *P. Tonduzii* Schltr., but has smaller flowers with a markedly different lip.

COSTA RICA, in cultivation at Las Coneavas, probably native of Cañari, C. H. Lankester 850. "Leaf Dark Cress Green [Ridgway], glabrous, thick." Pedicels pale green. Flower Indian Red [Ridgway] with lip and column the same but darker. All sepals green at base without. Dorsal sepal centrally sulcate within, "exteriorly 3 keeled." Lip with a "recessed area nearly hyaline, at the base of which a small central depression of black purple." Column short, square; rostellum projects as a tongue, dusky rose purple. (TYPE in Herb. Ames No. 28688.)

Pleurothallis canae Ames Sched. Orch. 2 (1923) 18; 7 (1924) 26, t. 13.

Material from Costa Rica differs from the typical plant in several features. Vegetatively the stems are much longer (some of them 5 cm. long), and the leaves much longer and narrower (up to 10.2 cm. long and not more than 1.33 cm. wide). Florally the perianth is a little smaller, the petals are shorter and broader (2.5 mm. long, up to 1.8 mm. wide), the keels on the lip are shallowly bilobed, and the lateral terminations of the wings at the apex of the column are lanceolate or oblong instead of short broad and truncate.

In view of the wide variation noted in certain members of this perplexing group of *Pleurothallis*, it seems inadvisable to segregate the following collection, which consists of a single specimen, from *P. canae* Ames, a Panamanian species.

COSTA RICA, Orosi, C. H. Lankester 919, June 19, 1924. (Flowered in cultivation at Cartago.) 4000 feet altitude. Flower "deep purple on hyaline base." (Herb. Ames No. 28687.)

Pleurothallis crassilabia A. & S. *sp. nov.* Rhizoma repens. Caules secundarii monophylli, triquetri. Folium ovatum vel oblongo-ovatum, basi cordatum. Inflorescentia singula, folii dimidium aequans. Flores paullo aperti. Sepala lateralialia in laminam latam bifidam connata, mentum formantia. Sepalum dorsale oblongo-lanceolatum, superne paullo latius. Petala minuta, spathulata, superne lacerato-serrata. Labellum in positu naturali oblongo-cuneatum, apice rotundatum. Columna minor, crassa.

Plant medium-sized, 11.5 to about 23 cm. tall. Rhizome creeping, 2.5–3 mm. in diameter, concealed by castaneous membranaceous imbricating sheaths which wither away in anthesis. Roots fibrous, glabrous, longitudinally sulcate in the dried plant, for the most part issuing from the rhizome at the base of the secondary stems. Secondary stems stout, monophyllous, triquetrous, 6–17 cm. long, gradually broadened and flattened (i.e. with broader wings) toward the apex, with several imbricating membranaceous sheaths or remains of sheaths at base. Leaf sessile, ovate to oblong-ovate, shortly cordate, 6–9 cm. long (from the base of the short auricles to the apex of the blade), 2.6–4.6 cm. wide below the middle, coriaceous, acute or acutish, inserted diagonally on the stem. Inflorescence solitary, about half the length of the leaf, about 3 cm. long; rachis floriferous nearly to its base, with a small conduplicate coriaceous sheath at the base. Flower fleshy in texture; perianth campanulate. Lateral sepals connate into an ovate lamina which is 9.5 mm. long, about 6 mm. wide, sharply bidentate from the apex to above the middle, 7-nerved, bicarinate on the outer surface (sharply so above). Dorsal sepal oblong-lanceolate, slightly broader above, 9–10 mm. long, about 3.2 mm. wide above the middle, acute, strongly concave below, 3-nerved. Petals much smaller, spatulate, with the upper margins deeply lacerate-serrate on each side, about 3 mm. long and 1.6 mm. wide above, obliquely inserted on the lateral sepals at the base, obtuse at the apex, 1-nerved. Labellum very fleshy, oblong-cuneate in natural position because of the erect tubular involute basal margins; lamina 5–5.4 mm. long, 2.3 mm. wide above the middle, oblong when forcibly spread

out, anterior margin rounded and denticulate, 3-nerved, with the apices of the nerves pyriform-dilated, centre of the lip and margins at the middle much thickened. Column very small, 3 mm. long, narrowly margined with a lightly trilobulate wing, extending into a stout subequally long foot which forms a mentum with the lateral sepals.

Pleurothallis crassilabia seems to be allied to *P. Cogniauxiana* Schltr., but differs markedly in the shape of the petals and lip. It is very similar to the Brazilian *P. bicarinata* Lindl., but has a creeping rhizome, inflorescence about half as long as the leaf, and deeply laccrate-serrate petals.

The description of the flower was mostly taken from an alcoholized flower, numbered 526, and sent to complete the numbers cited below.

COSTA RICA, Alto de La Estrella, Cartago, C. H. Lankester 807, March 26, 1924. Flowers half open, orange yellow, plants frequently occur in large colonies, on moss-covered trees, common south of Cartago. (TYPE in Herb. Ames No. 28722.): Tobosi, C. H. Lankester 535. 5000 feet altitude. "Fl. orange chrome."

***Pleurothallis decipiens* A. & S. sp. nov.** Herba mediocris, rhizomate repenti. Caules secundarii elongati, graciles, monophylli. Folium lineari-vel lanceolato-oblongum, rigide coriaceum. Racemi fasciculati, perbreves, pauciflori. Flores parvi. Sepala lateralía in laminam bidentatam connata, extus alte carinata. Sepalum dorsale oblongo-lanceolatum, tertia parte apicali valde incrassata. Petala minuta, cuneato-spathulata. Labellum simplex, expansum subpandurato-quadratum.

Plant medium-sized, about 22.5 cm. tall. Rhizome creeping, slender, entirely concealed by closely wrapped sheaths, somewhat branched. Roots fibrous, filiform, flexuous, glabrous, long, somewhat branched. Secondary stems slender, elongate, 6.5–12.1 cm. tall, approximate to 2.2 cm. apart, about 1 mm. in diameter, sulcate-angulate in the dried state, enveloped below by about two close tubular evanescent sheaths. Leaf solitary at the summit of each stem, erect, linear-oblong or lanceolate-oblong, about 10–11 cm.

long, up to 1.35 cm. wide, sessile, gradually narrowed at both ends, rigidly coriaceous, finely striate-rugose with revolute margins when dry, the mid-nerve conspicuously carinate beneath. Inflorescence a cluster of short few-flowered racemes, 1.5–2 cm. long, subtended by a scarious evanescent sheath. Floral bracts minute, infundibuliform. Flowers small, 5.9 mm. long; perianth segments subconnivent. Lateral sepals obliquely ovate-lanceolate, acute, connate into a lamina which is bidentate at the apex; lamina 5 mm. long, 5.5 mm. wide when expanded, each sepal 3-nerved and deeply carinate in the middle, forming a prominent mentum with the column-foot, anterior free half of each sepal somewhat fleshy-thickened. Dorsal sepal oblong-lanceolate, very concave, about 6 mm. long, 2.1 mm. wide when expanded, acute, the apical third strongly fleshy-thickened, 3-nerved, bluntly 1-keeled on the outer surface. Petals minute, cuneate-spatulate, about 2.4 mm. long, about 1.6 mm. wide above, acutish, the apex broadly rounded and erose-denticulate, 1-nerved, membranaceous. Labellum short, in natural position recurved and subconduplicate, simple with a short quadrate claw which is .9 mm. long; lamina when expanded pandurate-subquadrate, about 2.9 mm. long, 1.9 mm. wide above the middle, apex truncate and irregularly denticulate, 3-nerved, the sides indistinctly carinate-thickened, a fleshy callus at the base. Column short, stout, dorsally about 2.3 mm. long, apex truncate and lobulate-erose. Column-foot very broad.

Pleurothallis decipiens very strongly suggests *P. ca-chensis* Ames and *P. hondurensis* Ames in vegetative characters, but the flowers are very different.

COSTA RICA, Arenal, *Juvenal Valerio* 68, July 13, 1923. 600 metres altitude. (TYPE in U. S. Nat. Herb. No. 1169274.)

***Pleurothallis longipedicellata* A. & S. sp. nov.** Caules graciles, unifoliati. Folium lanceolato-ovatum, basi leviter cordatum, acuminatum, subcoriaceum. Racemi singuli vel bini, flaccidi. Flores parvi, longe pedicellati, pedicello filiformi. Sepala valde concava, bilabiata. Sepala lateralia omnino coalita, lamina late ovata, extus bicarinata. Sepalum

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dorsale simile. Petala lanceolata, acuminata. Labellum lanceolato-ovatum, obtusum. Columna brevis, basi crasse dilatata.

Plant large, lower portion missing. Stem up to 9.5 cm. tall, 2 mm. in diameter, monophyllous, glabrous. Leaf lanceolate-ovate, lightly cordate-clasping at the sessile base, 16.2–18 cm. long, 6.65–7 cm. wide below the middle, above long-acuminate to a more or less oblique tip, erect-spreading, many-nerved, subcoriaceous. Inflorescence one or two flaccid racemes which slightly surpass the leaf in length. Peduncle below the raceme about 5.5 cm. long, clasped at the base by an elongate conduplicate lanceolate sheath. Raceme very loosely flowered, 9.4 to about 15.2 cm. long, flowers 6–13 mm. apart. Floral bracts very small, infundibuliform, membranaceous. Pedicels including the ovary elongate, about 6–22.5 mm. long, filiform, flaccid, flexuous, arcuate or reflexed. Flowers small, bilabiate. Sepals deeply concave, membranaceous. Lateral sepals connate into a lamina which is broadly ovate, about 6.2 mm. long, 4–5 mm. wide when expanded, obtuse, 4-nerved, the inner pair of nerves carinate beneath. Dorsal sepal similar, ovate, 6.3 mm. long, about 4.2 mm. wide when expanded, acute, 3-nerved. Petals lanceolate, somewhat sigmoid in outline, 5.45 mm. long, about 1.2 mm. wide near the base, long-acuminate, 2-nerved, with one nerve much dilated at the apex, margins cross-denticulate. Labellum lanceolate-ovate, about 3.9 mm. long, 2.5–3 mm. wide near the base, obtuse, 3-nerved, the terminations of the nerves dilated and thickened, a large fleshy thickening near the base. Column minute, stout, dorsally about 2.4 mm. long; anterior lower portion dilated, fleshy, and papillose.

The nearest ally of *Pleurothallis longipedicellata* is *P. dentipetala* Ames, which has smaller leaves and broader petals. In habit it resembles *P. Rowleei* Ames, while the form of the petals is similar to that of the much smaller *P. cucullata* Ames.

COSTA RICA, Estrella, C. H. Lankester 792, March 27, 1924. "Semi translucent purplish—densely leaved plant,

common on moss covered trunks at locality." (TYPE in Herb. Ames No. 28294.)

Pleurothallis melicoides Schltr. in Fedde Repert. Beihefte 19 (1923) 24.

The Pejivalle specimens of C. H. Lankester differ from the type description in the following particulars. The stems are more slender and are usually less than 2 cm. in height instead of 2-3 cm. tall. The peduncle usually exceeds the leaf rather than almost equaling it. The pedicels appear much longer than their subtending bracts rather than almost equally long. The sepals and petals are slightly larger and the lateral sepals form a bidentate rather than an entire lamina. The ovary also appears to be shorter.

Pleurothallis melicoides belongs to an extremely variable group of *Pleurothallis*, and the differences mentioned above, while noticeable, are scarcely specific.

COSTA RICA, Pejivalle, C. H. Lankester 869, May 15, 1924. 2300 feet altitude. Common. Sepals yellowish green. Petals and lip (?) dark purplish. (Herb. Ames No. 28697.)

Pleurothallis nana A. & S. *sp. nov.* Herba nana, lepanthiformis, gracilis, caespitosa. Caules filiformes, multiarticulati, vaginis margine ciliatis. Inflorescentiae terminales et laterales, laxe distichiflorae, fractiflexae. Flores membranacei. Sepala lateralia anguste lanceolata. Sepalum dorsale majus, cucullatum. Petala oblique elliptico-oblonga. Labellum lingulato-lanceolatum, apice rotundatum.

Plant very small, 5-7.5 cm. tall, caespitose. Roots very slender, glabrous, flexuous. Stems scarcely stouter than the roots, spreading or arcuate, often branching and rooting at the nodes, many-jointed, apparently tightly enclosed in long tubular sheaths which are many-sulcate and inconspicuously muricate on the angles. Sheaths with infundibuliform spreading apices, long-ciliate on the margin. Leaves one to three to each stem, usually distant, always one at the summit; blades very small, oval, shortly petioled, 5.5-10 mm. long, 3-6 mm. wide, margined, obtuse with a deciduous

apicule, coriaceous, apparently fleshy when alive. Inflorescence solitary, short but conspicuously surpassing the leaf, terminal and also often lateral, loose, the rachis fractiflex. Peduncle below the raceme filiform, 5–13 mm. long, with one to four remote inconspicuous infundibuliform sheaths. Raceme 1–2.5 cm. long. Pedicels spreading, up to 6 mm. long. Flowers very small, membranaceous in the dried condition. Lateral sepals narrowly triangular-lanceolate, long-acuminate, about 3 mm. long, with a prominent dorsal fleshy keel, 1-nerved. Dorsal sepal longer and broader, ovate-lanceolate, 3.5 mm. long, long-acuminate, strongly cucullate, unicarinate on the back, 1–3-nerved. Petals very obliquely elliptic-oblong, about 1.55 mm. long, 1-nerved, obtuse. Labellum simple, lingulate-lanceolate, about 1.9 mm. long, broadly rounded at the apex, shallowly rounded-dilated below the middle with the swollen portion erect in natural position, 3-nerved, pubescent above on the upper surface. Column minute, about 1 mm. long.

Pleurothallis nana is closely allied to *P. guadalupensis* Cogn., but its stems have many more joints, its petals are dissimilar, and its flowers are differently colored. It is also related to *P. Williamsii* Ames, but has much smaller leaves as well as different petals and lip.

COSTA RICA, Pejivalle, C. H. Lankester 865, May 16, 1924. "Flowers snow white, 3 purple veins on obverse of leaves, these disappear at complete maturity." (TYPE in Herb. Ames No. 28677.)

***Pleurothallis parvula* A. & S. sp. nov.** Herba pusilla, caespitosa, radicibus fibratis numerosis. Caulis pergracilis, inferne vaginis tubulatis obtectus. Folium oblongo-ellipticum, margine revoluta erosum. Inflorescentiae folium superantes, laxissime pauciflorae, internodiis angulatis. Flos pro planta grandis. Sepala lateralia lanceolata, profunde carinata. Sepalum dorsale lanceolato-oblongum. Petala multo minora, anguste lanceolata. Labellum longe unguiculatum, circuitu obovatum; discus late ovatus, margine eroso, basi utrinque constrictus. Columna apice late alata.

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Plant very small, 7–8 cm. tall. Roots numerous, fibrous, flexuous, glabrous, slender. Secondary stems monophyllous, up to 3 cm. long, very slender, somewhat flattened above, the basal half with two approximate imbricating scarious sheaths. Leaf erect, oblong-elliptic, 2.25–3.1 cm. long, 6–7.5 mm. wide, obtuse, coriaceous, with minutely erose margins which are strongly revolute in the dried state, the mid-nerve prominently carinate beneath. Inflorescences one to three, much exceeding the leaf, up to 5.8 cm. long. Peduncle filiform, clasped at the base by a small membranaceous sheath and above by about two remote inconspicuous infundibuliform sheaths. Raceme more or less arcuate, 2–6-flowered; floral internodes 4–5 mm. long. Floral bracts minute, infundibuliform. Flowers relatively large. Lateral sepals either connate nearly to the apex or apparently free almost to the base, narrowly lanceolate, about 8.9 mm. long, 1.9 mm. wide below, gibbous at the base, dorsally carinate with the keel produced into an apical mucro, 3-nerved. Dorsal sepal lanceolate-oblong, 9 mm. long, 2 mm. wide, acute and dorsally mucronate at the tip, prominently keeled below the middle, concave, 3-nerved. Petals much smaller, narrowly lanceolate, about 4 mm. long, 1 mm. wide, acuminate, 1-nerved. Labellum obovate in outline, about 3 mm. long including the claw; claw narrow, 1.15 mm. long, gradually dilated from a very narrow base, a minute rounded-triangular auricle in the middle of each side; lamina broadly ovate, about 1.7 mm. wide, rounded at the apex, with erose margins, constricted near the cordate base to form small suborbicular lobules. Disc 3-nerved, indistinctly thickened on each lateral nerve in the middle. Column short, broadly winged above, 2.7 mm. long including the wing, which is 3-lobed with the apical lobe quadrate and dentate. Column-foot short and stout.

Pleurothallis parvula is allied to *P. alpestris* (Sw.) Lindl., but differs in the smaller slightly erose leaves and more ovate, not ligulate, lip. *P. trichophora* Lindl. has much smaller flowers and longer racemes. [Plate 23: habit life size. 1, column $\times$ 4 $\frac{1}{2}$. 2, labellum, three-quarter view $\times$

7. 3, petal $\times$ 4. 4, flower, side view $\times$ 3 $\frac{1}{2}$. 5, labellum, front view $\times$ 7.]

CUBA, Sur de Oriente y Pico Turquino, *Hno. Leon* 10790, July 1922. (TYPE in Herb. N. Y. Bot. Gard.)

Pleurothallis rectipetala A. & S. *sp. nov.* Herba mediocris. Caules monophylli, inferne univaginati. Folium patens vel deflexum, lanceolato-ovatum, valde cordatum, acuminatum. Pedunculi perbreves, uniflori, vagina cylindracea omnino inclusi. Flores pro sectione parvi. Sepala similia, rotundato-ovata, lateralialia in synsepalum connata. Petala oblongo-lanceolata, minute denticulata. Labellum ovatum, crassissimum.

Plant medium-sized. Stem over 21.4 cm. long (base not present), with a long tubular close sheath below. Leaf solitary, horizontally spreading or reflexed in the dried specimen, lanceolate-ovate, deeply cordate at base, 8.4–11 cm. long (including the basal auricles), 3.55–4.6 cm. wide below, long-acuminate, coriaceous, many-nerved. Inflorescences several, 1-flowered; peduncles entirely concealed by the surrounding tubular sheath, which is about 1.6 cm. long. Flowers exerted beyond the sheath. Lateral sepals connate into a round-ovate lamina which is shortly bidentate in anthesis, about 8 mm. long, 6.2–7.2 mm. wide, obtuse or splitting into two subacute points, prominently 4-nerved with two or four secondary nerves. Dorsal sepal round-ovate, about 8 mm. long, about 6 mm. wide, 3-nerved, acute. Petals oblong-lanceolate, almost straight, 5 mm. long, 2.1–2.5 mm. wide below, abruptly acute or minutely mucronate, the margin minutely denticulate. Labellum ovate, small, very thick and fleshy, densely papillose, about 3 mm. long and 2 mm. wide, obtuse or rounded at the apex. Column short and stout, with a very short foot.

Pleurothallis rectipetala is allied to *P. cardiothallis* Reichb. f. and *P. phyllocardia* Reichb. f., but differs from both in the almost straight petals and in other floral details. It has much larger leaves than *P. homalanthoides* Schltr., 3-nerved dorsal sepal and not falcate petals. Florally it resembles a gigantic form of *P. rhodoglossa* Schltr.

COSTA RICA, Cachi, *C. H. Lankester* 915. (Cultivated at Cartago and flowered in June 1924.) Flower dusky vinous purple, upper sepal "hyalinaceous," especially the margins. Lip deep vinous purple. Column white, anther cream color. (TYPE in Herb. Ames No. 28690.)

***Pleurothallis segregatifolia* A. & S. sp. nov.** Herba nana. Caules minuti, caespitosi, monophylli. Folia suborbicularia vel obovata, apice rotundata, inferne plus minusve cuneato-angustata. Inflorescentiae folia erecta multo superantes, sub folia orientes. Racemi laxe pauciflori. Sepala lateralibus oblique semiovata, per dimidium basalem connata, apice cucullato-obtusa. Sepalum dorsale elliptico-oblongum, cornu obtuso terminans. Petala falcato-linearibus, breviora. Labellum expansum cuneato-obovatum, trilobatum.

Plant dwarf, 4–7.5 cm. tall. Roots stout for the plant, fibrous, flexuous, glabrous. Stem minute, caespitose, 4–6 mm. (rarely up to 9 mm.) long, monophyllous, invested below with tubular scarious sheaths. Leaf suborbicular to obovate or cuneate-spatulate, 6 mm. (rarely 12 mm.) long, commonly 4–5 mm. wide, rounded and minutely 3-denticulate at the apex, more or less cuneate-narrowed below, margined, fleshy in the formalin material, coriaceous when dry, the mid-nerve prominently sulcate above and carinate beneath; petiole 1–6 mm. long, channelled, gradually merging into the cuneate leaf-base. Inflorescences much surpassing the leaf, inserted 2–4 mm. below the leaf, one to several to a stem. Peduncles filiform, 1.9–4.4 cm. (usually about 3 cm.) long below the raceme. Raceme suberect or flaccid, 1–3.2 cm. long at maturity, loosely flowered. Rachis fractiflex. Floral bracts minute, infundibuliform. Flowers up to eleven (usually less), membranaceous. Lateral sepals obliquely semiovate, connate about to their middle, forming a distinct mentum with the column-foot, about 3.8 mm. long, free part 1.6 mm. wide below, obtuse at the cucullate tip, carinate without, 2-nerved. Dorsal sepal elliptic-oblong, terminating in a hollow obtuse horn, 3.8–4.2 mm. long, 1.5 mm. wide, 3-nerved, dorsally carinate. Petals linear-falcate, about 3 mm.

long, .8-.9 mm. wide, obtuse or subacute, very slightly broader above the middle, 1-nerved. Labellum ligulate and recurved in natural position, 3-lobed near the apex with the lateral lobes erect, when expanded lanceolate-obovate in outline, about 2.8 mm. long (excluding the minute claw), 1.2 mm. wide above the middle, 3-nerved; lateral lobes semicuneate with a rounded apex; middle lobe orbicular, recurved. Column about 2.1 mm. long, arcuate, terminating in a petaloid 3-lobulate wing.

The nearest allies of *Pleurothallis segregatifolia* are the West Indian *P. elegantula* Cogn. and *P. trilobata* Fawc. & Rendle, the former differing markedly in flower structure, the latter in vegetative and floral characters.

The sepals and lip appear purple in the flower preserved in formalin.

COSTA RICA, La Fuente, Peralta, C. H. Lankester 914, June 24, 1924. "Flower hyaline & vinous purple." On trunks of tree ferns. (TYPE in Herb. Ames No. 28691.)

***Pleurothallis spectabilis* A. & S. sp. nov.** Herba caespitosa. Radices numerosae, fibrosae. Caules abbreviati, monophylli. Folia oblanceolata, inferne sensim angustata, acuta. Inflorescentiae folia multo superantes. Pedunculus complanatus. Racemi densi, distichiflori. Flores magni. Sepala lanceolata, intus dense papillosa. Petala minuta, falcato-ligulata. Labellum bis deflexum, expansum ligulatum, late truncatum, bicarinatum. Gynostemium curvatum, late alatum.

Rhizome abbreviated. Roots numerous, fibrous, somewhat flexuous, glabrous, slender. Stems abbreviated, 1-2 (usually about 1.5) cm. long, monophyllous, entirely concealed by loose tubular sheaths or the fibrous remains of sheaths, 1-jointed near or above the middle. Leaves cuneate-spatulate or oblanceolate, very gradually narrowed into the sulcate petiole; blade 6.35-10.3 cm. long, 1.15-1.6 cm. wide above the middle, acute, coriaceous, with five to seven more conspicuous nerves and the mid-nerve sulcate above and strongly carinate beneath. Peduncle up to the raceme 15.3-21 cm. long, ancipitous, narrowly winged, with two or

three inconspicuous distant infundibuliform sheaths. Rachis 1.5–8 cm. long, suberect to arcuate, densely four to many-flowered, gently fractiflex, glabrous. Floral bracts distichous, infundibuliform, deeply keeled on the back. Flowers large for the genus. Sepals spreading, densely papillose on the inner surface except near the base, fleshy, with the margins somewhat revolute. Lateral sepals lanceolate, lightly falcate, very oblique at the base, connate below the middle, the basal part membranaceous and saccate, 1.6–1.9 cm. long, 4.2–4.6 mm. wide above the connate portion, 3-nerved, with the median nerve strongly carinate on the outside and extended into a mucro. Dorsal sepal similar, lanceolate, dorsally carinate, 1.6–1.9 cm. long, 5.5–6 mm. wide below the middle, 5-nerved, concave at base. Petals minute, ligulate-falcate, slightly broader near the apex, 3.5–4 mm. long, 1 mm. or less wide, rounded and papillose-thickened at the apex on the outer surface and concave inside, obliquely 1-nerved, mucronate. Labellum very small, in natural position twice deflected (once very abruptly near the base, and again, less abruptly, above the middle), when expanded ligulate-oblong, truncate and lightly retuse at the apex, narrowed in the middle and broadest at the base, about 5.1 mm. long when expanded, 2 mm. wide at base; a pair of keels leave the margin about 2 mm. from the base and gently converge, terminating near the apex. Column curved, slender, about 5 mm. long to the apex, with a broad membranaceous wing which is denticulate on the upper margin and sharply lacerate-dentate at the apex; column-foot short, stout, fleshy, incurved, mostly free.

Pleurothallis spectabilis is closely allied to *P. platyrachis* Rolfe, but differs in the more numerous scarlet flowers, truncate-retuse lip, and dentate column-wing. In habit it resembles *P. diuturna* Schltr., but has larger and different flowers. It is apparently a near ally of *P. Pfavii* Reichb. f., but is distinguished by its smaller leaves, 5-nerved dorsal sepal, carinate floral bracts, retuse labellum, and by the color of the flowers.

PANAMA, Province of Veraguas, Santa Fé, C. W. Powell 382, February 1924. 1500 feet altitude. "Grows in medium sun. Flowers scarlet." (TYPE in Herb. Ames No. 28139.)

***Lepanthes exasperata* A. & S. sp. nov.** Herba nana, caespitosa. Radices fibratae, numerosae. Caulis unifolii, filiformes, plurivaginati. Folium anguste lanceolatum, in vivo valde carnosum, margine revolutum, apice tridentatum. Inflorescentiae breves. Flores membranaceae. Sepala margine et nervis dorso minute ciliolata. Sepala lateralia obliquissime ovata. Sepalum dorsale majus, ovato-oblongum. Petala inverse reniformia, lobis ovatis, subaequalibus. Labellum trilobatum.

Plant dwarf, caespitose, 4.5–5.4 cm. tall. Roots numerous, fibrous, flexuous, filiform, finely pubescent. Stems filiform, monophyllous, about 1–2.5 cm. long, 3–5-jointed, entirely concealed by tightly clasping tubular sheaths. Sheaths longitudinally nerved and pubescent on the angles, abruptly dilated into an ovate aristate nervose lamina which is ciliate on the margin. Leaf erect or erect-spreading, narrowly lanceolate, very fleshy with revolute margins (in material preserved in formalin), 2.15–2.7 cm. long, 4.6–5.6 mm. wide below the middle, long-narrowed above to a broad tridentate apex, rounded or cuneate below to a short-petioled base which is tightly enclosed by the uppermost sheath of the stem, the longitudinal centre of the blade deeply sulcate on the upper surface and bluntly carinate beneath. Inflorescences one to three with apparently only one fertile raceme at a time, very short, about 5–9.5 mm. long, rarely up to 9-flowered. Flowers approximate, distichous, on the upper part of the peduncle, minute, apparently membranaceous. Sepals cellular-ciliate on the margins and on the nerves of the outer surface. Lateral sepals connate to the middle, broadly and very obliquely ovate, 2 mm. long, 1.6 mm. wide at the base of the free portion, acute, 2-nerved, the lobes correct with the outer margins prominently ciliate and the inner margins very obscurely so. Dorsal sepal larger, oblong-ovate, 3 mm. long, about 1.65 mm. wide, acute, 3-nerved. Petals inversely reniform, bilobed, with the lobes set at an obtuse angle, about 2.2 mm. wide from tip to tip, entire margin densely and finely long cellular-fimbriate; posterior and anterior lobes subequal, ovate, obtuse. Labellum 3-lobed; lateral lobes broadly dolabriform, about 1.7 mm.

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wide, expanded into a broad transversely oblong pubescent apex; middle lobe much smaller, deltoid in outline with a retuse-truncate apex, finely long-hairy at the base, short-hairy above. Column characteristic of the genus, dilated above into a retuse and apiculate tip.

Lepanthes exasperata closely resembles *L. micrantha* Ames, but differs strikingly in the shape and size of the leaves (even in fresh specimens) and in the relative width of the petal lobes.

COSTA RICA, Navarro, *C. H. Lankester* 689, 1923. (TYPE in Herb. Ames No. 28791.)

***Lepanthes ovata* A. & S. sp. nov.** Herba caespitosa. Radices fibratae, minute papillosae. Caules gracillimi, multivaginati. Folia ovato-lanceolata, acuminata, margine minute cartilagineo-denticulata. Racemi foliis breviores. Flos in sicco membranaceus. Sepala lateralibus oblique semiovata, partim connata. Sepalum dorsale ovatum, paullo majus. Petala transverse bilobata, lobo posteriore majore. Labellum trilobatum; lobi laterales dolabriformes, carinati; lobus medius minutus.

Plant caespitose, 14.5 cm. tall to the apex of the erect leaf. Stems monophyllous, 11–11.5 cm. long, very slender, with ten sheaths, inconspicuously angulate and very shortly pubescent on the angles. Sheaths infundibuliform, abruptly dilated into ovate mucronate ciliate laminac. Leaf ovate-lanceolate; petiole very short, 2 mm. long; blade about 3 cm. long, 1 cm. wide, acuminate and minutely 3-dentate at the tip, rounded at base, conspicuously marginate and finely cartilaginous-denticulate on the entire margin except near the base. Inflorescences two, filiform, shorter than the leaf (one very short). Raceme long-pedunculate, densely 2–11-flowered. Flowers membranaceous in the dried specimen. Lateral sepals obliquely semiovate, connate for nearly half their length, about 3.5 mm. long, 3.5 mm. wide across the cuneate lower portion, acute, 2-nerved. Dorsal sepal ovate, acuminate, acute, about 3.8 mm. long, 2.8 mm. wide below, 3-nerved. Petals transversely ligulate-oblong, very oblique; posterior lobes larger than the anterior lobes, obliquely

oblong, about 1.85 mm. long, 1 mm. wide; anterior lobes oblong-lanceolate, 1.3 mm. long, about 1 mm. wide near the base. Labellum 3-lobed; lateral lobes porrect, relatively large, dolabriform, with a conspicuous keel parallel with the apex which is about 1.9 mm. wide; middle lobe minute. Column slightly shorter than the lateral lobes of the lip, abruptly mucronate at the summit.

Lepanthes ovata differs from the closely allied *L. Ekmanii* Sehltr. in having 2-3-nerved sepals, dissimilar petals, and a sessile labellum. [Plate 23: habit life size. 1, flower, spread out $\times$ about 4. 2, labellum with column turned back $\times$ 7. 3, petal $\times$ 4 $\frac{2}{3}$.]

CUBA, Sur de Oriente y Pico Turquino, Sierra Maestra, Hno. Leon 10709, July 1922. 1000-2000 metres altitude. (TYPE in Herb. N. Y. Bot. Gard.)

Lepanthes subdimidiata A. & S. *sp. nov.* Herba parva. Caules graciles, monophylli, multiarticulati, vaginis omnino arcte inclusi. Folium ovatum, basi rotundatum, apice tridentatum. Inflorescentiae quam folia plerumque breviores. Racemi dense distichiflori. Flores perparvi. Sepala ovata vel lanceolato-ovata, lateralia pro parte connata. Petala subdimidiata, lanceolata. Labellum trilobatum; lobi laterales dolabriformes; lobus medius minutus.

Plant small, 7.5-8.3 cm. tall including the erect leaf. Roots filiform, fibrous, flexuous, minutely pubescent or papillose. Stems very slender, 4-5 cm. long, 8-10-jointed, concealed by tightly clasping sheaths. Sheaths sulcate by reason of elevated veins, minutely pubescent on the angles, terminating in an ovate flaring margined lamina which is minutely ciliate on the edge. Leaf ovate, shortly and abruptly petioled; petiole about 2 mm. long; lamina, 2.4-2.9 cm. long, 1.6 cm. more or less wide, rather abruptly narrowed above to a tridentate apex, many-nerved with three more prominent veins, membranaceous, apparently purplish-tinted on the under surface. Inflorescences one to three in the axil of the terminal leaf, usually much shorter than the leaf (rarely equaling the leaf). Peduncles below the inflorescence filiform, about 1 cm. long, with one inconspicuous tubular

sheath. Raceme short, dense, distichously many-flowered, usually less than 1 cm. long (rarely up to 1.8 cm. long). Floral bracts sheathing the slightly longer pedicels, exteriorly cellular-pubescent, shallowly infundibuliform at base. Flower minute, membranaceous, about 5 mm. across from the tip of the dorsal sepal to the tips of the laterals. Lateral sepals lanceolate-ovate, connate for about one-third of their length, 3 mm. long, 2-nerved, cellular-ciliate especially on the outer margins, the acute tips more or less recurved. Dorsal sepal broadly ovate, 2.5 mm. long, sharply acute, 3-nerved, somewhat cellular-ciliate on the margin. Petals lanceolate, almost dimidiate, with the anterior division abbreviated, about 1.9 mm. long, obtuse. Labellum 3-lobed; lateral lobes dolabriform, dilated at the apex into the transverse flattened lanceolate surfaces usual in the genus, about .5 mm. long, wider at the apex; middle lobe minute. Column characteristic of the genus, clinandrium abruptly mucronate at the summit.

Lepanthes subdimidiata resembles *L. Turrialvae* Reichb. f. in habit, but the almost dimidiate petals are distinctive.

COSTA RICA, Pejivalle, C. H. Lankester 839, May 29, 1924. 3000 feet altitude. "Sepals hyaline pinkish, petals dull reddish purple marginally centrally dull orange, leaves deep velvet green, upper surface like shagreen." (TYPE in Herb. Amcs No. 28693.)

Hexisea sigmoidea A. & S. *sp. nov.* Herba insignis. Caulis ex internodiis gracilibus constant, in nodis ramosi. Folia bina in nodis, anguste oblonga. Flores singuli, in apice internodii summi. Sepala ovato-lanceolata. Petala angustiora. Labellum sigmoideum; basis anguste concava; deinde lamina latere utrinque auriculata, parte anteriore abrupte reflexa cuneata late truncata. Columna crassa, antice in medio tumefacta.

Stems branching at the nodes; internodes successively shorter from base upward, .6 (uppermost)–21.3 (lowermost) cm. long (perhaps more), 2–2.5 mm. in diameter (the lowermost), smooth, terete, the upper one longitudinally sulcate in the dried specimen clothed at base with tubular sheaths or

the fibrous remains of sheaths, the uppermost internodes more or less completely enveloped by a few rigid tubular imbricating sheaths; nodes with a pair of subopposite leaves, the lower nodes producing a tuft of fibrous verrucose grayish roots. Leaves oblong-linear or oblong, up to 9 cm. long and 9.5 mm. broad (the uppermost sometimes 1.5 cm. long and about 4 mm. wide), rounded and bilobed at apex, a minute apicule between the lobules, subsessile at base, coriaceous, the median nerve sulcate on the upper surface and carinate beneath. Flower apparently solitary at the summit of the uppermost internode. Pedicellate ovary slender, often 2 cm. long, concealed by a few imbricating sheaths. Lateral sepals ovate-lanceolate, 1.5 cm. long, 7.1 mm. wide below the middle, obtuse or acute, strongly concave below the middle, 13-nerved, five of which are conspicuous. Dorsal sepal similar, about 1.4 cm. long, 7.75 mm. wide below the middle. Petals similar, narrower, lanceolate, 1.35 cm. long, 5-6 mm. wide below the middle, obtuse, 5-7-nerved. Labellum in natural position strongly sigmoid; basal portion fleshy, narrowly and deeply concave, about 4 mm. long, subparallel with the column; central portion abruptly dilated into the lateral lobes between which are two approximate very fleshy keels; forward portion sharply reflexed and produced into a lamina; lateral lobes membranaceous, erect, 3-4 mm. long, embracing the summit of the column; anterior portion about 8 mm. long, very broadly truncate and lightly retuse when spread out, in natural position oblong toward the base and cuncate-flabellate above, margins strongly plicate and crenate-erose. Column short, stout, about 7 mm. long, the concave anterior face continuous with the fleshy base of the labellum, a conspicuous conical boss in the middle, margin slightly dilated in the middle on each side; clinandrium irregularly crenate.

There are no near relatives of *Hexisea sigmoidea*, but its habit recalls *H. oppositifolia* Reichb. f.

COSTA RICA, Santa Clara de Cartago, C. H. Lankester 570, December 23, 1923. "Whole flower Flame Scarlet, Pl. 2 [Ridgway], semitranslucent or gelatinous, . . . —rare." (TYPE in Herb. Ames No. 28120.)

Epidendrum adnatum A. & S. *sp. nov.* Planta *Epidendrum Lankesteri* valde revocans. Caulis in parte basali nudus, complanatus, vaginis distichis omnino inclusus. Folia pauca, lineari-lanceolata, longe acuminata. Pedunculus bialatus. Inflorescentiae breves, interdum trifurcatae. Sepala lateralia oblique oblanceolata. Sepalum dorsale oblanceolatum. Petala filiformia. Labellum apici columnae gracilis affixum, ovatum.

Plant 36 cm. or less tall, the stem apparently rising from a creeping rhizome. Roots few, scattered, fibrous, flexuous, glabrous, longitudinally sulcate when dry. Stem complanate, leafless below, entirely invested with imbricating sheaths of which the middle and upper ones are longitudinally striate in the dried specimen. Leaves few, distichous, linear-lanceolate or linear-elliptic, 11–21.5 cm. long, 9.5–14 mm. wide (the lowermost and uppermost blades have the smaller dimensions), very long-acuminate above, gradually cuneate-narrowed below, many-nerved, chartaceous, up to 3.7 cm. apart in the middle of the stem (closer above), ascending. Peduncle below the inflorescence reaching 9.3 cm. long, strongly complanate, bialate especially below, 2–3 mm. wide across the lower portion. Inflorescences 4 cm. or less long, consisting at maturity of a short very strict 3-branched panicle at the summit of a long naked peduncle or of a long-peduncled panicle supplemented by an abbreviated short-peduncled 2-branched panicle—the two terminal, but enclosed at base by the sheath of the uppermost leaf. Bracts approximate or imbricate, conduplicate, scarious and striate-nervose when dry; the lowermost bract of the long-peduncled inflorescence narrow and elongated (1.75–2.15 cm. long). Flowers medium-sized. Lateral sepals narrowly oblanceolate, very oblique, 1.22 cm. long, about 2.85 mm. wide above the middle, acute, mucronate on account of an apical keel, 5-nerved. Dorsal sepal oblanceolate, 1.2 cm. long, about 3 mm. wide above the middle, acute, 5-nerved. Petals filiform, 1.22 cm. long, 1-nerved. Labellum simple, base adnate up to the apex of the column; lamina relatively small, ovate, about 5.4 mm. long, about 4.2 mm. wide below the middle, abruptly apiculate. Disc with a pair

of fleshy semiellipsoid basal calli, with a lower fleshy median ridge and with two less conspicuous ridges which continue the lateral calli. Column about 8.9 mm. long, slender, abruptly dilated at the apex, obscurely crenulate at the tip.

Epidendrum adnatum is closely allied to *E. Lankesteri* Ames, but differs in the narrower leaves, the narrower floral parts, and unlobed apiculate lip.

COSTA RICA, Pejivalle, *C. H. Lankester* 838, May 30, 1924. Hyaline sepals and ovary striately speckled purple; the long filiform petals pale crystalline green; the lip whitish green with two white arcuately projecting protuberances at base; column very pale green; anther-cap tinged purplish. (TYPE in Herb. Ames No. 28696.)

***Epidendrum dentiferum* A. & S. sp. nov.** Herba parva sed cum floribus mediocribus. Caulis breves, distichifolii. Folia oblongo-linear. Flores probabiliter plures. Sepala lateralia falcato-lanceolata, obliqua, acuminata. Sepalum dorsale lanceolatum, acuminatum. Petala linearia, falcata, acuta. Labellum suborbiculare, abrupte mucronatum, basi bicallosum. Columna brevis, apice dentata.

Plant low, 10–11 cm. tall to the summit of the inflorescence. Roots numerous, filiform, fibrous, flexuous, intertwining, glabrous. Stems branched at the base, sometimes apparently rising from a creeping rootstock, 2.7–8 cm. long, complanate, mostly concealed by striate leaf-sheaths. Leaves distichous, oblong-linear, 2–6.75 cm. long, 5–5.5 mm. wide, inconspicuously bilobed and apiculate at the rounded apex, slightly narrowed near the base, subcoriaceous, about 1–1.5 cm. between the alternate leaves. Flowers at the summit of the stems, probably several in the living plant (mostly deciduous), relatively large. Sepals and labellum with recurved apices. Lateral sepals falcate-lanceolate, about 9.6 mm. long, about 2.9 mm. wide, long-acuminate, unicarinate on the outer surface with the keel extending into a mucro, 5-nerved at the base. Dorsal sepal lanceolate, 8.9 mm. long, 2.15 mm. wide, acuminate, carinate near the tip, 5-nerved below the middle. Petals narrowly linear, falcate, about 8.7 mm. long, acute, 1-nerved (indistinctly 3-nerved below). Labellum suborbicular,

simple, very abruptly mucronate; lamina 8 mm. long from the middle of the base to the apex, including the apicule, and about as wide above the middle, cordately affixed to the apex of the column, with two small basal fleshy calli. Column short, stout, about 3.7 mm. long including the terminal lacerate petaloid wing.

Epidendrum dentiferum is a small plant with a comparatively large flower. It is closely allied to *E. porpax* Reichb. f., but has taller stems, longer thinner leaves, and apparently smaller flowers with a lacerate-dentate column-wing.

COSTA RICA, Pejivalle, C. H. Lankester 843, May 30, 1924. Flowers pale translucent olivaceous green. Growing on stems of a tree in association with *Polypodium bifrons*. (TYPE in Herb. Ames No. 28695.)

***Epidendrum dolabrilobum* A. & S. sp. nov.** Herba epiphytica. Caules foliosi, omnino vaginis inclusi. Folia lorata, obtusa, disticha. Inflorescentiae paniculatae, ramis brevibus. Flores pro sectione parvi. Sepala lateralia obliquissime lanceolato-obovata, concava, complicato-mucronata. Sepalum dorsale oblongo-obovatum, concavum. Petala cuneato-spathulata, marginibus superioribus erosis. Labellum trilobatum; lobis lateralibus dolabriformibus, dentatis; lobo medio cuneato-quadrato, bilobato.

Plant epiphytic, myrmecophilous, up to 60.4 cm. tall (lower portion missing). Stems somewhat swollen below, entirely concealed by striate-nervose leaf-sheaths, plurisulcate when dry, up to 7.5 mm. in diameter below. Leaves lorate, 10.1–15.3 cm. long, about 1.25 cm. wide, obtuse at the apex, abruptly narrowed at the base, distichous, 2.2–4.3 cm. apart, thinly coriaceous, many-nerved with the mid-nerve sulcate above and prominently carinate beneath. Peduncle below the raceme conspicuous, up to 28.1 cm. long, entirely concealed by closely imbricating scarious nervose sheaths or in part by the fibrous remains of sheaths. Inflorescence paniculate, about 11.1–12.5 cm. long; the branches short, densely flowered, ascending, 1.5–3 cm. long, 1.5–3 cm. apart, distichously arranged, often bifurcate near the base.

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Flowers small for the section. Pedicellate ovaries 1.6–3 cm. long, finely short-pubescent; ovaries 4-angled. Sepals densely and inconspicuously short-pubescent on the outer surface. Lateral sepals lanceolate-obovate, very oblique, about 7.1 mm. long, 3 mm. wide across the expanded upper part, abruptly complicate-mucronate, with a high conspicuous dorsal keel, obliquely inserted at the base, concave, 4-nerved. Dorsal sepal oblong-obovate, slightly shorter and narrower than the laterals, obtuse or acutish, provided with a low keel, 3-nerved, concave. Petals euneate-spatulate, 6.1 mm. long, about 2 mm. wide above, acute, 3-nerved, the upper margins irregularly erose-denticulate. Labellum adnate to the column to its apex, sharply 3-lobed; lamina reniform in outline, about 1.1 cm. wide, 3 mm. long to the deeply retuse centre of the middle lobe, bicallose at base with an intermediate keel which is broad at its base, gradually narrowed and extended nearly to the apex of the middle lobe; lateral lobes spreading, dolabriform, irregularly dentate at the broadly rounded apex; middle lobe smaller, cuneate-quadrate, bilobed, apiculate, the lobules irregularly laevigate-dentate at the apex. Column stout, dilated above, about 4.2 mm. long, characteristic of the genus; clinandrium entire.

Epidendrum dolabrilobum is related to *E. radicans* Lindl., but the flowers are much smaller. The leaves are like those of *E. imatophyllum* Lindl.

COSTA RICA, Las Coneavas, C. H. Lankester 769, February 27, 1924. "A common sp. of the region, growing chiefly on Inga, strongly myrmecophilous, bulbs swollen at base—flowers cream fading yellow." (TYPE in Herb. Ames No. 28295.)

***Epidendrum erosum* A. & S. sp. nov.** Pars herbarum inferior non visa. Caulis maxima pro parte vaginis tubulatis obtectus. Folia disticha, elliptico-lanceolata, submembranacea. Inflorescentiae nutantes, breviter pedunculatae. Flores crassi. Sepala lateralia anguste obovata, acuta. Sepalum dorsale simile, euncatum, angustius. Petala anguste euneato-spathulata, minute erosa. Labellum columnae longe

adhaerens, reniformi-cordatum, basi bicallosum. Gynostemium generis.

Stems somewhat branched, mostly concealed by the leaf-sheaths. Sheaths tubular, striate-nervose, loose, the upper ones rugulose and subcoriaceous. Leaves distichous, elliptic-lanceolate, 3.5–6.2 cm. long, 8.5–14 mm. wide, about 2 cm. apart, obtuse or acutish, cuneate-narrowed to the sessile base, submembranaceous, margins revolute when dry, many-nerved, the mid-nerve conspicuously carinate beneath. Inflorescence nodding, loosely 10-flowered (more or less). Rachis apparently 6 cm. long (usually broken off). Peduncle to the lowest flower about 1.6 cm. long, 1-bracted. Floral bracts triangular, scarious, concave, the mid-nerve conspicuous, much shorter than the pedicellate ovary. Flower medium-sized, rather fleshy. Lateral sepals narrowly obovate, about 1.15 cm. long, 4.5 mm. wide above the middle, acute with a strongly thickened dorsal median portion above, oblique at base, 5-nerved. Dorsal sepal similar, cuneate, 1.16 cm. long, about 4.1 mm. wide above, obtusish, thickened near the apex, 5-nerved (the lateral pair indistinct). Petals much narrower, cuneate-spatulate, about 1.15 cm. long, 2.5–3 mm. wide near the apex, rounded above, near the apex fleshy-thickened in the centre, 1-nerved with several branches, margin inconspicuously erose cellular-ciliate. Labellum long-adherent to the column; lamina reniform-cordate, semiorbicular, entire, but the irregular margins cellular-erose, 4.5–5.1 mm. long in the middle, 7 mm. wide, with a blunt point. Disc with a pair of approximate fleshy calli at base beneath the apex of the column. Column stout, dilated above, about 8 mm. long dorsally and shorter in front.

Epidendrum erosum is very close to *E. jamaicense* Lindl., but the flower is much more fleshy, the petals cuneate-spatulate and minutely erose. *E. quadratum* Lindl. has broader leaves of thicker texture and a different labellum. *E. suborbiculare* Schltr. has shorter leaves, linear petals, and a dissimilar lip. [Plate 24: habit life size. 1, labellum, front view $\times$ about 2. 2, flower $\times$ 1 $\frac{1}{2}$.]

COLOMBIA, Paramo de Guasca, Bro. Aristide-Joseph A464, January 1920. (TYPE in Herb. Ames No. 28128.)

***Epidendrum integrilabium* A. & S. sp. nov.** Herba mediocris. Pars caulis inferior non visa. Caules graciles, vaginis foliorum striatis verruculosus omnino obtecti. Folia disticha, lanceolato-linear, patentia. Inflorescentiae terminales, dense distichiflorae. Flores perparvi. Sepala crassa, oblonga, trinervia. Petala linearia, uninervia. Labellum gynostemio adnatum, ovatum, acutum, trinervium, basi bicallosum. Gynostemium generis.

Stems slender, little branched, 1.5–2 mm. in diameter, entirely concealed by the striate verruculose leaf-sheaths. Leaves lanceolate-linear, distichous, spreading, 2.2 (rarely) –5.85 cm. long, 2.9–4.6 mm. wide below the middle, obtuse or acutish, margins inconspicuously erose, mid-nerve conspicuously carinate beneath. Inflorescence a dense raceme which is more or less arcuate, 2.8–5 cm. long. Floral bracts distichous, triangular-lanceolate, exceeding the ovary. Flowers very small, subsessile, the perianth parts spreading above the middle, 6.5 mm. long in natural position. Sepals 3-nerved, fleshy. Lateral sepals oblong, oblique, 7 mm. long, 2.1–2.5 mm. wide when the involute margins are flattened, rounded above, abruptly acute, a pronounced dorsal keel at the tip produced into an apicule. Dorsal sepal similar, with a more pronounced mucro. Petals linear, obtuse, about 6 mm. long, 1.5 mm. wide, 1-nerved or indistinctly 3-nerved, concave near the tip. Labellum long-adherent to the column; lamina ovate, sessile, 5 mm. long, 3.1 mm. wide near the base, acute, the apex thickened by a dorsal keel. Disc 3-nerved, a pair of inconspicuous calli at base. Column short, stout, almost 3 mm. long.

Epidendrum integrilabium in vegetative appearance closely suggests *E. fimbriatum* HBK., but the labellum has entire margins.

BOLIVIA, Yungas, *H. H. Rusby* 2817, 1885. 6000 feet altitude. (TYPE in Herb. Acad. Nat. Sci. Phila.)

***Epidendrum lockhartioides* Schltr.** in Fedde Rept. Beihefte 19 (1923) 39.

This striking species has appeared in a recent collection made by C. H. Lankester in Costa Rica. The floral parts of

Lankester's specimen appear to be slightly smaller than typical. [Plate 24: habit life size. 1, lateral sepal $\times 2 \frac{1}{2}$. 2, petal $\times 2 \frac{1}{2}$. 3, dorsal sepal $\times 2 \frac{1}{2}$. 4, flower, side view $\times$ about 2. 5, labellum and column $\times 3$.]

COSTA RICA, Peralta, C. H. *Lankester* 683. 200 feet altitude.

Epidendrum nervosiflorum A. & S. *sp. nov.* Herba mediocris, nervis crassis florum parvorum insignis. Radices numerosae. Caules prope basim teretes et ramosi, superne ancipites. Folia in parte superiore, rara, elliptico-oblonga vel ligulata. Inflorescentiae plerumque paniculatae, ramis brevibus. Sepala lateralia oblique ovata, complicato-acuta. Sepalum dorsale lanceolato-ovatum. Petala linearia. Labellum simplex, triangulari-lanceolatum, basi bicallosum. Columna brevis.

Plant 12.2–42 cm. or more tall, freely branching below. Roots very numerous, filiform, fibrous, flexuous, glabrous, sometimes adventitious at the lower nodes. Stems terete near the base, strongly ancipitous above, the lower portion naked in anthesis, the upper portion nearly or entirely concealed by leaf-sheaths. Leaves elliptic-oblong to ligulate, one to four on the upper part of the branches, distichous, usually 1–2.5 cm. apart, 2.85–6 cm. long, 3.2–13 mm. wide, amplexicaul, obtuse, the apex minutely bilobed and apiculate, spreading, membranaceous or somewhat coriaceous when dry, the mid-nerve conspicuously carinate beneath. Peduncle below the inflorescence 2.7–6.5 cm. long, ancipitous, bialate, provided with one to two remote tightly clasping tubular conduplicate sheaths. Inflorescence usually paniculate, sometimes simply racemose on the young growths, 1.2–10.7 cm. long; branches short, ascending, 1.5–2.5 cm. long, distichous; rachis gently fractiflex. Floral bracts very small, infundibuliform, very conspicuously wing-carinate on each side. Flowers minute for the genus, rigid. Sepals and petals green with stout and conspicuous nerves. Pedicellate ovary about 1 cm. long in anthesis, glabrous. Lateral sepals obliquely ovate, about 4 mm. long, about 2.1–2.5 mm. wide when expanded, strongly complicate-acute, concave,

4-nerved, the mid-nerve bluntly carinate on the outer surface. Dorsal sepal about 3.85 mm. long, 2 mm. wide, lanceolate-ovate, acute, 3-nerved, the mid-nerve bluntly carinate, concave. Petals linear, slightly broader above, 3-3.3 mm. long, about .8 mm. wide above the middle, conspicuously 1-nerved, obtuse or acutish. Labellum adnate to the column to the apex; lamina triangular-lanceolate, simple, concave, rather fleshy, about 3.7 mm. long, about 2.6 mm. wide at the base when expanded, acute, rounded at the base, provided at the base with a pair of short thick complanate rounded calli which are adnate to the column. Column very stout and thick, about 1.6 mm. long. Pollinia pyriform-ovoid, somewhat complanate.

Epidendrum nervosiflorum is apparently allied to *E. sericardium* Sehltr.

COSTA RICA, Cartago, Estrella, C. H. Lankester 790, March 27, 1924. 5500 feet altitude. "Sepals and petals green, lip white, anther purplish, lower lobes of column orange, two raised orange spots on white portion of lip, near centre" [probably the two basal calli]. (TYPE in Herb. Ames No. 28296.): A fragmentary specimen preserved in formalin is the same species, C. H. Lankester 688, March 26, 1924.

***Epidendrum ramosissimum* A. & S. sp. nov.** Herba ramosissima. Caules leviter flexuosi vel fractiflexi. Vaginae foliorum valde verrucosae. Folia teretia, canaliculata. Inflorescentiae perbreves, laxae pauciflorae. Sepala lateraliter oblique lanceolata. Sepalum dorsale simile sed angustius. Petala linearia. Labellum triangulare, carina tridentata ornatum. Columna brevis, crassa.

Plant 37-55 cm. or more tall (summit of stem missing). Roots fibrous, numerous, 1.8 mm. in diameter at the stout base, gray, glabrous. Stem distichously branched at every node, the lateral branches usually forking several times, 2.5-3.5 mm. in diameter below, partially concealed by verrucose leaf-sheaths, sulcate-rugose and shining in the dried specimen; branches commonly incline in one direction as though wind-blown. Leaves terete, deeply channelled,

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striate-rugose in the dried specimen, obtuse or acutish, the lower and larger 7-14 cm. long, the average 2-3 cm. long, the smallest 8 mm. long, all 1-1.5 mm. wide. Inflorescences very short, racemes at the tips of lateral branches (lateral branchlets sometimes minute and consequently the inflorescence appears to be lateral), laxly 1-3-flowered; rachis slender, fractiflex, with the peduncle about 1.5 cm. long, 1-sheathed at base. Floral bracts about 5 mm. long, scarious, spreading, striate-nervose, dorsally carinate. Flower small, 6.8 mm. long, perianth parts rigid-nervose. Lateral sepals obliquely lanceolate, about 6.8 mm. long, 2 mm. wide below the middle, acuminate, apical margins complicate, 5-nerved. Dorsal sepal similar, narrowly lanceolate, slightly narrower. Petals linear, 6 mm. long, .75 mm. wide near the base, obtusish. Labellum sessile, tubular-involute in natural position, when expanded triangular, lightly constricted above the middle, 4 mm. long, 3 mm. wide at the subcordate base, a 3-toothed keel in the middle, the central tooth extending nearly to the acute apex of the labellum. Column short and stout, 3 mm. long.

Epidendrum ramosissimum is allied to *E. lancilabium* Schltr., but is distinct in its smaller flowers, 3-nerved petals, and 3-carinate lip. [Plate 24: habit life size. 1, labellum and column, side view $\times 3$. 2, dorsal sepal $\times 2 \frac{1}{3}$. 3, lateral sepal $\times 2 \frac{1}{3}$. 4, petal $\times 2 \frac{1}{3}$. 5, labellum, front view $\times 3 \frac{1}{3}$.]

COSTA RICA, El Calvario, Ujarrás, C. H. Lankester 581, January 12, 1924. 3600 feet altitude. "Very common at this wind swept locality." (TYPE in Herb. Ames No. 28129.)

Epidendrum reflexum A. & S. sp. nov. Herba caespitosa. Caules vaginis omnino inclusi, prope basim aphylli. Folia disticha, lanceolata vel oblongo-lanceolata, prominenter acuminata, quam inflorescentia paulo longiora. Pedunculus trivaginat. Flores pro sectione parvi. Sepala lateralialia oblanceolato-oblonga, acuta, valde carinata. Sepalum dorsale anguste ellipticum. Petala filiformia. Labellum trilobatum; lobi laterales transverse oblongi; lobus medius in lobulos lineares transverse divergens.

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Plant caespitose, about 27 cm. tall, the stems strongly arcuate (in our specimen). Roots numerous, fibrous, flexuous, glabrous, longitudinally sulcate when dry. Stems entirely invested by sheaths, leafless below, slender near the base and apex, apparently enlarged in the middle, 2-5 mm. in diameter in the dried state. Leaves about six, lanceolate or oblong-lanceolate, 7.5-11 cm. long, 1.35-1.85 cm. wide (the lower leaves much smaller), distichous, 2-2.8 cm. apart, the uppermost internode much shorter, long-acuminate above, cuncate-narrowed below, rather membranaceous, many-nerved with seven prominent nerves on the under surface. Inflorescence shorter than the leaves, racemose, arcuate. Peduncle below the raceme 5.1 cm. long, provided with tree sheaths. Sheaths narrowly lanceolate, membranaceous, conduplicate in the dried specimen, the lowest 2.85 cm. long, the upper ones shorter. Raceme 3.5 cm. long (perhaps longer in anthesis), densely flowered. Floral bracts lanceolate, membranaceous. Flowers small for the section. Sepals and petals apparently strongly reflexed in anthesis. Lateral sepals oblong-oblancheolate, 8.6-9 mm. long, 2.8 mm. wide above the middle when expanded, concave or navicular, acute, the apex thickened, three prominent nerves and a lesser nerve on each side; a conspicuous median keel extends from the base to beyond the apex where it becomes more prominent. Dorsal sepal very narrowly elliptic, about 9 mm. long, about 2 mm. wide, navicular, acute, apex thickened, 3-nerved, with an inconspicuous nerve on each side toward the base, on the outer surface keeled toward the apex. Petals filiform, 8.7 mm. long, 1-nerved. Labellum adnate to the tip of the column; lamina deeply 3-lobed, with the lateral lobes folded into reduplicate halves, about 4.5 mm. long, about 6 mm. wide between the apices of the terminal lobules when they are expanded; lateral lobes transversely oblong or shallowly dolabriform, the lateral margins irregular, the free tips triangular falcate; middle lobe narrow, transversely spreading into divaricate linear-lanceolate obtuse lobules, with a broad blunt apicule in the shallow sinus. Disc with two fleshy calli at the base and three long approximate fleshy calli extending from the basal calli to the

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base of the middle lobe. Column slender, dilated above, 6.5 mm. long; clinandrium entire. Pollinia irregularly complanate-cylindrical or complanate-pyriform.

Vegetatively *Epidendrum reflexum* resembles *E. piestocaulos* Schltr.; in floral structure it is allied to *E. Turiarvae* Reichb. f.

The name "reflexum" is in allusion to the perianth segments.

COSTA RICA, Arcnal, *Juvenal Valerio* 61, September 28, 1923. 600 metres altitude. Vernacular name "Torito." (TYPE in U. S. Nat. Herb. No. 1169273.)

Elleanthus tricallosus A. & S. *sp. nov.* Herba epiphytica, caulibus simplicibus. Folia disticha, ascendunt, anguste lanceolata, longe acuminata. Racemi terminales, breves, pauciflori. Sepala ovato-oblonga, acuta, lateralibus obliqua, apice carinata. Petala subspathulato-linearibus, apice rotundata. Labellum basi saccatum, sacco bicalloso; pars anterior major, suborbicularis, margine lacero emarginata, basi callo transverso bidentato finita.

Plant epiphytic, 29-32 cm. or more tall including the erect-spreading leaves (stem often broken off below). Roots fibrous, flexuous, glabrous. Stems caespitose, slender, 1-1.5 mm. in diameter, mostly concealed by close striate-nervose sheaths. Leaves narrowly lanceolate, 4.4-13 cm. long, 7-13 mm. wide below the middle (the uppermost and lower leaves shorter), long-acuminate to the sharp unequally 3-toothed apex, the central tooth long-extended, cuneate-narrowed to a sessile base, rigid, plicate, many-nerved with about five more conspicuous. Inflorescence terminal, a distichous few-flowered rather dense raceme. Floral bracts 1.8 cm. long or less (the upper successively smaller), strongly concave, embracing and surpassing the pedicellate ovary, broadly ovate when spread out, striate-nervose, rather abruptly acuminate with a rigid point, somewhat erose a little above the middle; the lowermost bract empty and abruptly terminated by a reduced leaf-blade. Rachis and ovaries black-pubescent. Lateral sepals obliquely ovate-oblong, about 8.5 mm. long, about 4 mm. wide, acute, complicate-mucronate and dorsally car-

inate at the apex, 5-nerved. Dorsal sepal similar, not oblique, abruptly acute and thickened, concave near the apex. Petals linear-subspatulate, about 8.2 mm. long, 2.4 mm. wide above the middle, rounded or subtruncate at the apex, gently curved at the oblique base, 3-nerved. Labellum cucullate-involute in natural position, subequaling the sepals, constricted below the middle; lower portion saccate, hemispherical, furnished with a pair of large subspherical approxi-



mate calli, bounded in front by a transverse thickened bidentate wall; anterior portion larger, when expanded suborbicular, emarginate, with irregularly laccrate margins. Column stout, about 6.8 mm. long, curved, dorsally rounded in cross section, anterior face concave with a median elevated ridge.

Elleanthus tricallosus is allied to *E. Brenesii* Schltr., but differs in its erect few-flowered racemes and bidentate calyx in front of the saccate base of the labellum. Its unbranched stems differentiate it from *E. Tonduzii* Schltr.; its flowers are apparently very like those of *E. Albertii* Schltr.

[Fig. 4: 1, dorsal sepal $\times$ about 3. 2, petal $\times$ 3. 3, tip of inflorescence $\times$ about 2. 4, lateral sepal $\times$ 3. 5, labellum, front view $\times$ 2. 6, column $\times$ 3. 7, labellum, side view $\times$ about 2.]

COSTA RICA, Santa Clara de Cartago, C. H. Lankester 562, December 23, 1923. "Flower between Purple (true) & Rhodamine. [Ridgway] Column white, on mossy tree trunks 10' to 15' up as a rule." (TYPE in Herb. Ames No. 28121.)

Elleanthus trilobatus A. & S. *sp. nov.* Herba gracilis, alta. Caulis vaginis foliorum pro parte obtectus. Folia disticha, lanceolata, rigida. Inflorescentiae singulae, terminales. Racemi arcuati, densiflori. Bracteae longe acuminatae, conspicuae. Sepala oblonga, complicato-acuta, concava. Petala linearia, acuta vel obtusa. Labellum flabellatum, parte anteriore trilobatum, margine eroso-lacerato. Discus basi saccata callis binis approximatis et antice carinis geminis triangulatis ornatus.

Plant slender, 70–80 cm. tall to the summit of the raceme (broken off at the decumbent base). Stem slender, about 1.5 mm. in diameter, subterete, partially concealed by the leaf-sheaths (lower portion of stem leafless and sheathed only). Sheaths close, tubular, striate-nervose, lower ones terminated by a black band. Leaves distichous, narrowly lanceolate to narrowly elliptic-lanceolate, 3.9–18.7 cm. long, 5–30 mm. wide below the middle, acuminate above to a sharply and obliquely 3-toothed apex, cuneate-narrowed to a sessile base, spreading-ascending, 3.4–7 cm. apart, plicate, many-nerved with five nerves prominently raised beneath. Inflorescences terminal, arcuate, very dense, many-flowered; raceme 6.5–8 cm. long, 3.5–4 cm. across in the dried specimen. Floral bracts ovate-lanceolate, abruptly long-acuminate, the larger lowermost up to 3 cm. long, far exceeding the flowers, nervose, concave. Rachis strongly rugose, more or less pubescent. Ovary densely tomentose. Flowers small. Sepals sparingly pubescent on the outer surface. Lateral sepals obliquely oblong, strongly concave at base, 7.3 mm. long, 3.5 mm. or more wide below the middle, acute and complicate-mucronate, about 10-nerved. Dorsal sepal obo-

vate-oblong, about 6.9 mm. long, 3 mm. wide across the slightly broader upper part, complicate-mucronate, concave, 7-nerved with two lateral indistinct nerves. Petals linear, 6.5 mm. long, 1.5 mm. wide, acute or obtuse, 3-nerved. Labellum deeply saccate in natural position; lamina when expanded broadly flabellate, about 6–7 mm. long, more than 7 mm. wide across the forward portion, apex lightly but distinctly 3-lobed, anterior margins (except the centre of the middle lobe) lacerate-erose; lateral lobes broadly semiorbicular; middle lobe similar in shape but much smaller, thickened and entire at the apex; saccate base filled with a pair of approximate ovoid-pyriform complanate calli; in front of these calli there is a pair of transverse low triangular keels. Column straight, slender, broadly winged above, about 4.5 mm. long dorsally, longer in front. Pollinia ovoid-pyriform with a groove ending in a deep pit on one side.

COSTA RICA, from San Ramon to Esparta, A. M. Brenes 14281, May 14, 1901. 1000–1200 metres altitude. (U. S. Nat. Herb. No. 579491.)

PANAMA, San Juan, C. W. Powell 3267 (*Hort. Powell* 97), April 1923. Epiphyte at sea level. (TYPE in Herb. Ames No. 28126.): Canal Zone, around Culebra, H. Pittier 3443, May 6, 1911. 50–159 metres altitude: Provinc of Colon, near Porto Bello, William R. Maxon 5808, May 27, 1912. On tree trunks, near sea level.

***Sobralia mucronata* A. & S. sp. nov.** Herba alta ut videtur. Caulis teres, vaginis tubulatis pro parte inclusus, parte superiore paucifoliata. Folia lanceolato-elliptica, acuminata, basi cuneata, plicata. Flos pro genere parvus. Sepala lateralibus elliptico-oblonga, conspicue mucronata. Sepalum dorsale lineari-oblongum, conspicue mucronatum. Petala oblancheolato-oblonga, mucronata. Labellum quadrato-oblongum, carinis nonnullis undulatis percursum. Columna gracilis, apice trilobata.

Plant apparently tall (lower portion missing). Stem terete, over 31.7 cm. tall, 2.5–3 mm. in diameter, distichously 2–3-leaved near the summit, partially concealed by tightly

clasping leaf-sheaths which are elongate tubular and striate in the dried specimen. Leaves lanceolate-elliptic, 12.25–17.9 cm. or more long, 2.05–3.45 cm. wide, acuminate above, cuneate-narrowed to a sessile base, nervose, coriaceous, many-nerved with seven nerves conspicuous on the under surface, plicate with revolute margins in the dried state. Flower apparently solitary, small for the genus, the pedicellate ovary invested by several imbricating sheaths. Sepals rather fleshy in texture. Lateral sepals elliptic-oblong, about 2.5 cm. long, 6.9 mm. wide, acute, prominently mucronate, lightly oblique, 7–9-nerved. Dorsal sepal linear-oblong, abruptly and prominently mucronate, 2.6 cm. long, 5.3 mm. wide, with seven prominent nerves. Petals oblanceolate-oblong, 2.35 cm. long, 5.5 mm. wide above the middle, acute, apex mucronate, 5-nerved, the lateral nerves branching below. Labellum in natural position tubular-involute near the base, when expanded broadly elliptic-oblong or quadrate-oblong, about 2.3 cm. long, 1.15 cm. wide above the middle, entire, retuse, apiculate at the broadly rounded apex, anterior margins strongly crisped; lamina with two prominent keels, which are much thickened at their very base, extending from the base nearly to the apex of the lamina, supplemented near its longitudinal middle by two short keels on each side of the central pair and between the central pair by three keels which extend nearly to the apex,—all of the keels abruptly increasing in altitude toward their fleshy crisped and wavy anterior portion. Column slender, about 1.35 cm. long, apex 3-lobed, with the lateral lobes linear-falcate and incurved, the middle lobe suborbicular and strongly galeate.

There are two species allied to *Sobralia mucronata*, namely, *S. luteola* Rolfe, which differs in having larger flowers and fimbriate-pilose nerves on the labellum, and *S. corazoi* Ames, which has much broader leaves and a different labellum.

COSTA RICA, San Carlos, C. H. Lankester 764, March 1923. "Flowered in cult. Cartago, March 1924. Flower greenish white, frilled edge of lip white, lines of pleated crest brown red." (TYPE in Herb. Ames No. 28297.) Alcohol material of this species from which the description of the flower was drawn bears the number 685.

Maxillaria albiflora A. & S. *sp. nov.* Herba caespitosa. Pseudobulbi monophylli, anguste pyriformes, curvati, vaginis imbricantibus inclusi. Folia longe petiolata; lamina oblonga, acuta, basi cuneata. Pedunculus uniflorus, vaginis laxis obtectus. Flos grandis. Sepala lateralia longe lanceolato-triangularia, acuminata, obliqua. Sepalum dorsale lanceolatum, concavum. Petala sepalo dorsali similia, minora. Labellum ovatum, unicallosum, medio incrassatum.

Plant caespitose. Roots fibrous, flexuous, smooth and shining in the dried state. Pseudobulbs monophyllous, about 4 cm. or less tall, narrowly arcuate-pyriform, complanate in the dried state, apparently finely rugose-striate, invested by distichous imbricating sheaths, the uppermost often leaf-bearing. Leaves very long petioled; petiole of the leaf on the pseudobulb about 8–11.5 cm. long (the petiole of the leaf borne on the sheath much shorter), conduplicate, channelled; blade oblong, about 16.7 (sheath-leaf)–28.4 cm. long, 2.85–4.1 cm. wide, acute, cuneate-narrowed below, many-nerved, the mid-nerve carinate beneath. Peduncle 1-flowered, approximate to the base of the pseudobulb, about 5.6–7.5 cm. long, concealed by loose scarious sheaths which are short and closely imbricating at the base and are longer and slightly imbricating above. Pedicellate ovary about 1.5 cm. long, exceeded by a concave scarious sheathing bract which is about 2.7 cm. long. Flower large, white, with spreading many-nerved perianth segments. Lateral sepals lanceolate-triangular, 3.05 cm. long, about 1 cm. wide at the base, long-acuminate, acute, with a short mucro from a dorsal subapical keel, oblique at the base. Dorsal sepal lanceolate, about 2.9 cm. long, 8.5 mm. wide near the base, long-acuminate, with a minute dorsal mucro, concave or navicular. Petals similar to the dorsal sepal, about 2.55 cm. long, about 7 mm. wide in the middle. Labellum shorter than the other segments, simple or subsimple, in natural position recurved, its sides contracted by a fleshy trilobulate median callus, about 1.65 cm. long; lamina ovate, 1.05 cm. wide near the base when expanded, rounded at the apex, which is minutely retuse, anterior margin denticulate-erose, entire

centre of lip from base to apex fleshy-thickened, the thickening in the apical portion especially prominent beneath and terminating in a subapical mucro. Column stout, short, 1 cm. long, the margin of the clinandrium lobulate and minutely ciliate, anterior face concave; foot about 7 mm. long, sulcate.

Maxillaria albiflora is allied to *M. pulla* Linden & Reichb. f., but has shorter scapes, larger flowers of different color, and a distinctive labellum. *M. trinitatis* Ames is a stouter plant with larger leaves, smaller flowers, and different labellum.

TRINIDAD, Tucuche, W. G. Freeman & R. O. Williams 10086, January 10, 1922. Flowers white, fragrant. (TYPE in Herb. N. Y. Bot. Gard.)

Maxillaria confusa A. & S. *sp. nov.* Herba *Maxillariae pachyacro* Schltr. similis. Planta nana, caespitosa. Pseudobulbi parvi, monophylli. Folium elliptico-oblongum. Pedunculi uniflori, pluribracteati. Flos magnus. Sepala similia, anguste triangulari-lanceolata, elongata, lateralia obliqua. Petala sepalis lateralibus similia sed minora. Labellum trilobatum, expansum obovato-oblongum, medio callo ornatum. Mentum conspicuum.

Plant vegetatively small for the genus, about 13 cm. tall, apparently caespitose. Roots numerous, fibrous, flexuous, branched. Pseudobulbs monophyllous, mostly concealed by a pair of basally imbricating distichous leaf-bearing sheaths, complanate-cylindric, about 1.6 cm. long, finely rugose when dry. Leaf elliptic-oblong, stoutly petioled; petiole laterally flattened, channelled, 1-2.2 cm. long; blade 10 cm. long, 2.2 cm. wide in the middle (leaves on the sheaths much smaller), rounded or perhaps acute at the apex (tip split and broken in our specimens), cuneate-narrowed below, coriaceous, the mid-nerve sulcate above and conspicuously carinate beneath. Inflorescence much shorter than the leaves. Peduncles 1-flowered, about 4.5 cm. long (including the ovary), filiform, with four tubular sheaths, the uppermost clasping and exceeding the ovary. Flower large for the plant, erect, perianth segments parallel, and but very

slightly spreading. Lateral sepals narrowly triangular-lanceolate, 2.04 cm. long, about 7.2 mm. wide at the oblique base (measured along the column-foot), abruptly acute at the very apex, many-nerved, forming with the column-foot a prominent mentum which is about 7 mm. long. Dorsal sepal similar, triangular-ligulate, about 2 cm. long, 4.9 mm. wide near the base, acutish, concave below. Petals similar to the lateral sepals but smaller, lanceolate, about 1.8 cm. long, 3.7 mm. wide below, obliquely inserted on the column. Labellum relatively small, in natural position erect with its sides upcurving, when expanded obovate-oblong in outline, sharply 3-lobed near the apex, 1.21 cm. long, 6 mm. wide near the apex, in the middle a fleshy lingulate sulcate callus which extends in two lines toward the base; lateral lobes semiobovate, broadly rounded with irregular margins above; terminal lobe suborbicular-quadrate, about 2.6 mm. long and a little broader, with a large fleshy thickening in the centre of the under surface. Column extended into a long foot; free part very short and stout, about 4 mm. long, a short narrow fimbriate-lacerate wing at the summit.

Maxillaria confusa has several very close allies. It has considerably smaller flowers than and somewhat different lip characters from *M. pachyacron* Schltr., which appears doubtfully separable (differing apparently only in absence of papillae on the lip) from *M. Reichenheimiana* Endres & Reichb. f. It also has flowers which are different in color from those of *M. Reichenheimiana*. From *M. ringens* Reichb. f. (in which species the flowers are similar in size to those of *M. pachyacron* and *M. Reichenheimiana*) *M. confusa* is distinguishable by its smaller flowers, long mentum, shorter callus on the lip, and by its lacerate-margined androelinium.

COSTA RICA, Peralta, C. H. *Lankester* 908, June 25, 1924. Flower white. Common in forest zone of the Atlantic slope. (TYPE in Herb. Ames No. 28689.)

Maxillaria diuturna A. & S. *sp. nov.* Herba caulescens, cauli vaginis distichis imbricantibus dense obtecto. Pseudobulbi monophylli, in siccio aneipites. Folia oblongo-elliptica.

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Inflorescentiae singulae, uniflorae, e bractearum axillis. Flos parvulus. Sepala lateralibus ovato-lanceolata, acuta, mentum distinctum formantia. Sepalum dorsale simile. Petala ovato-oblonga, acuta. Labellum expansum panduratum, parte inferiore anguste elliptica medio callosa, parte terminali cuneata leviter retusa. Columna in pedem latum extensa.

Plant caulescent. Stem entirely concealed by densely imbricating sheaths and leaf-bases which are distichous with a membranaceous border. Pseudobulbs monophyllous, ovate-oblong in outline, strongly complanate and rugose-striate in the dried state, about 2.5 cm. long, about 4 cm. apart, base concealed by sheaths and leaf-bases. Leaf oblong-elliptic, with a short petioled conduplicate base; blades 5.8–9.7 cm. long, 1.3–2.2 cm. wide, apex rounded and minutely bilobulate, coriaceous, with the mid-nerve sulcate above and carinate beneath. Sheaths sometimes leaf-bearing. Flowers small, campanulate, solitary in the axils of the sheaths. Lateral sepals ovate-lanceolate, about 1.22 cm. long, 5.6 mm. wide near the concave oblique base, acute, 9-nerved, forming a distinct short mentum with the column-foot. Dorsal sepal similar, concave. Petals ovate-oblong, 1.05 cm. long, 5.9 mm. wide below, acute, oblique, 3–5-nerved with the lateral nerves branching. Labellum sessile, the sides erect and more or less conduplicate in natural position, lamina when expanded oblong-pandurate, about 1 cm. long; basal portion narrowly elliptic, 4–4.9 mm. wide, with the centre occupied by a broad elevated oblong callus; anterior portion somewhat cuneate, lightly retuse, about as wide across the rounded apex as at the base of the labellum; entire disc minutely cellular-papillose. Column arcuate, triquetrous in cross section, about 6 mm. long dorsally, extended into a short broad foot.

Maxillaria diuturna is an ally of *M. chiriquensis* Schltr., but has broader leaves, broad flattened pseudobulbs, and a differently shaped lip.

PANAMA, Cative-Porto Bello Trail, C. W. Powell 376, February 1924. Sea level. Grows in considerable sunlight. “. . . from seed capsules must have been in flower for a

long time." Flowers yellow inside, reddish yellow outside. (TYPE in Herb. Ames No. 28136.)

Maxillaria foliosa A. & S. *sp. nov.* Herba caespitosa. Caules ramosi, vaginis foliorum omnino obtecti. Pseudobulbi rari, elliptico-complanati, vulgo bifoliati. Folia numerosissima, disticha, oblonga. Flores axillares, rari. Sepala oblonga, acuta, lateralia obliqua. Petala falcato-oblonga, minora. Labellum supra medium obscure trilobatum, truncato-rotundatum. Columna generis.

Plant 15–18 cm. tall. Roots numerous, slender, fibrous, longitudinally sulcate, glabrous. Stems caespitose, branching, entirely concealed by striate-rugose leaf-sheaths. Pseudobulbs ellipsoid, strongly flattened when dry, about 1.5 cm. long, erect-ascending, usually diphyllous, commonly about 2 cm. apart on the branches (some branches have none), dull, rugose. Leaves small, distichous, dense, spreading, caducous on the lower parts of the stem and branches, oblong to lanceolate-oblong with abruptly clasping bases, commonly 2–3 cm. long (rarely up to 4.8 cm. long), about 5 mm. wide, rounded above with an obliquely bilobed apex, subcoriaceous, the mid-nerve conspicuously sulcate above and carinate beneath. Flowers growing singly in the axils of the upper leaves, very sparse, pale yellow-green. Lateral sepals oblong, about 9 mm. long, 4 mm. wide, lightly falcate-oblique, acute at the rounded apex by reason of a dorsal mucro, 9-nerved with five nerves more prominent. Dorsal sepal similar. Petals oblong, lightly falcate, 8 mm. long, about 3 mm. wide, rounded above, with a minute dorsal mucro, 3-nerved with a weaker nerve on each side. Labellum oblong, dilated above the middle and consequently very obscurely 3-lobed, the dilated margins involute, about 8.8 mm. long, about 3.6 mm. wide across the dilated portion when spread out; apical lobe subquadrate, subtruncate, about 2.8 mm. long, about 3.2 mm. wide near its base; disc with a low callus in the middle, minutely papillose near the margins of the lateral lobules and near the apex of the labellum. Column stout, about 5.2 mm. long, anterior face concave, curving into a foot.

Maxillaria foliosa appears to be without close allies, but somewhat resembles *M. microphyton* Schltr. in habit.

COSTA RICA, Peralta, La Union, C. H. Lankester 478. 3000 feet altitude. Flower pale yellow-green. (TYPE in Herb. Ames No. 27204.)

***Maxillaria longipetiolata* A. & S. sp. nov.** Herba acaulis. Rhizoma verisimiliter abbreviatum. Pseudobulbus ovoidcus, monophyllus. Folium lineari-lanceolatum, longe petiolatum. Flos singulus, ruber. Sepala oblonga. Petala linearia. Labellum trilobatum, quam sepala brevius, medio callo ornatum. Columna generis.

Rhizome apparently abbreviated. Pseudobulb about 2.5 cm. long, ovoid, monophyllous. Leaf linear-lanceolate, long-petioled; petiole about 3.8 cm. long, slender, channelled; blade 16 cm. long, 1.9 cm. wide across the middle, acuminate toward the apex, cuneate-narrowed at base, subcoriaceous. Flower solitary; perianth segments rigid-nervose. Lateral sepals 1.8 cm. long, about 5.8 mm. wide near the base, lanceolate-oblong, acute, apical margin involute. Dorsal sepal similar, slightly shorter and narrower. Petals about 1.5 cm. long, 3.1 mm. wide above the middle, linear, oblique near the apex, acute. Labellum distinctly 3-lobed above the middle with the lateral lobes erect in natural position, 1.41 cm. long, about 8 mm. wide across the middle of the basal elliptical portion when spread out, traversed by a longitudinal thickened band ending in a callus; lateral lobes (free portion) small, about 1 mm. long, 1.5 mm. wide, rounded, thickened below the apex; middle lobe lingulate from a broad base, about 5.9 mm. long, 3.5 mm. wide across the middle, thickened, but with a membranaceous margin above, apparently lightly retuse. Column rather small, 7 mm. long, flattened in front with a short but conspicuous foot. Anther yellow.

Maxillaria longipetiolata is allied to *M. curtipes* Hook. f., but the sepals appear narrower, the lip sharply 3-lobed, and the flower different in color.

PANAMA, Hill east of Corozal, C. W. Powell 307. Flowers in June. Sea level. Flowers Indian Red [Ridgway],

labellum blackish red like dried blood. (TYPE in Herb. Ames No. 26908.)

Maxillaria maleolens Schltr. in Fedde Repert. Beihfte 19 (1923) 233.

Two plants from widely separated localities are referred to this species. Both plants show sepals which are ovate-oblong rather than narrowly oblong, and in this respect seem to resemble *Maxillaria elatior* Reichb. f. Both plants, moreover, have slightly smaller flowers (sepals about 2.1 instead of 2.4 cm. long, labellum 1.85–1.90 cm. long instead of 2.3 cm. long) than those of the type.

The Honduranian plant, which is said to be very common where it was collected, appears to be a good match for the type of *M. maleolens*.

The Panamanian plant shows considerable variation from the Honduranian plant, although vegetatively similar. It is apparently a lower plant with somewhat more fleshy leaves. The leaves are lanceolate-oblong rather than lorate, and are shorter and broader than in the typical plant (up to 32.5 cm. long and 6.4 cm. wide). The chief difference is in the labellum, which is only lightly trilobed and is bright deep purple rather than yellow.

SPANISH HONDURAS, Vicinity of Porto Castilla, ex hort., Oakes Ames s.n., March 1923. Said to be terrestrial. Flowers yellow.

PANAMA, Gatun Lake, C. W. Powell 276, January 1923. Sea level. "Found on a floating and decayed log in Gatun Lake. It may have floated down the Chagres River." Sepals and petals yellow, lip bright deep purple.

Maxillaria parvilabia A. & S. sp. nov. Herba epiphytica, caulescens, foliosa. Caulis vaginis distichis imbricantibus obtectus. Folia lanceolato-lineariter, patentia. Inflorescentiae numerosae, saepius plures ex axillis foliorum exorientes. Pedunculi uniflori. Sepala lateralia oblongo-lanceolata, acuta. Sepalum dorsale oblongum, acutum. Petala cuneato-oblonga, acuta vel acuminata. Labellum

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multo minus, obovato-ellipticum, obscure trilobatum. Gynostemium perparvum.

Plant caulescent, epiphytic. Stem 4 ft. tall, straight or more or less curved, usually with several short lateral branches, 6 mm. in diameter (at the base of our specimens), entirely concealed by distichous imbricating leaf-sheaths, woody. Leaves lanceolate-linear, 5.6–13.5 cm. long, 9–14 mm. wide below (those at the summit of the branches or on the stems of the branches often much smaller, rarely 9 mm. long, 4.5 mm. wide), spreading, obliquely bilobed at the rounded apex, clasping at the base, chartaceous, the mid-nerve sulcate above and conspicuously carinate beneath. Inflorescences solitary to several, rising from the leaf-axils. Peduncles 1-flowered, about 3.5 cm. long, mostly concealed by loose scarious tubular sheaths. Flower medium-sized. Lateral sepals oblong-lanceolate, 1.63–1.85 cm. long, 4.1–5 mm. wide below, acute and dorsally keeled at the apex, lightly falcate, with five more conspicuous nerves. Dorsal sepal similar, oblong, 1.75–2.12 cm. long, 3.95–4.9 mm. wide, acute, dorsally carinate at the apex. Petals cuneate-oblong, 1.31–1.54 cm. long, 3.9–4.5 mm. wide above the middle, acute or acuminate, with a dorsally subcarinate apex, lightly oblique, 5-nerved. Labellum relatively very small, erect, and clasping the column in natural position, gently recurved with tubular-erect sides, 5.5–6.1 mm. long, 3.2–3.5 mm. across when expanded, obovate-elliptic in outline, lightly 3-lobed above the middle; lateral lobes distinct only at their broadly rounded apex; terminal portion rounded-triangular, fleshy in texture, with a recurved obtuse apex. Disc prominently 5-nerved with a small fleshy rounded callus a little below the middle. Column very short, about 2.8 mm. long at the back, with a shorter but prominent foot.

Maxillaria parvilabia resembles *Camaridium costaricense* Schltr. and *C. simile* Schltr. in habit, but the lip is very distinctive.

COSTA RICA, Province of San José, La Palma, *Paul C. Standley* 32939, February 3, 1924. About 1600 metres altitude. "On mossy tree trunk; stems 4 ft. high; segments canary yellow; lip dark red; common." (TYPE in Herb. Ames)

No. 29016.); *Standley 32983* (a small specimen): Province of Cartago, Alto de La Estrella, *Standley 39584*, March 26, 27, 1924. On trees. (Flowers passé.)

Maxillaria semiorbicularis A. & S. *sp. nov.* Herba caulescens, valida. Caulis vaginis distichis arcuato imbricatis obiectus. Pseudobulbus complanato-ovoideus, monophyllus. Folia oblonga, apice ipso rotundata. Sepala lateraliter lanceolata, acuminata. Sepalum dorsale oblongo-lanceolatum. Petala oblique lanceolato-elliptica. Labellum semiorbiculare, antice trilobatum; lobi laterales falcato-triangulares, patentes; lobus intermedius ovato-triangularis; discus in basi tuberculorum fasciculo et in medio lamella semilunata dentata ornatus.

Plant caulescent, very stout. Stem woody, entirely invested by distichous closely imbricating leaf-bearing sheaths. Pseudobulbs (but one present) apparently remote, monophyllous, ellipsoid, strongly complanate in the dried state, nearly 4 cm. long, conspicuously rugose, yellowish and shining. Leaves (the larger blades near and on the pseudobulb) oblong, 12.9–32.3 cm. long, 2.75–3.6 cm. wide, subacute with an abruptly rounded minutely apiculate apex, gradually narrowed below (the leaf on the pseudobulb with a distinct slender laterally compressed channelled petiole which is about 6 cm. long), chartaceous, the mid-nerve somewhat sulcate above and conspicuously carinate beneath; the blades on the stem smaller, conduplicate, arcuate, sometimes 2 cm. long, 1.6 cm. wide when unfolded. Inflorescences numerous, 1-flowered, solitary in the axils of the sheaths. Peduncles strict, 7–8 cm. long, subflexuous, mostly concealed by scarious tubular sheaths which waste into fibres. Flower medium-sized for the genus. Lateral sepals lanceolate, about 2.25 cm. long and 7.9 mm. wide below the middle, acuminate, complicate-acute, 7–15-nerved. Dorsal sepal similar, oblong-lanceolate, 2.5 cm. long, 7 mm. wide near the middle, sharply complicate-acute. Petals obliquely oblong-elliptic, about 2.2 cm. long, 6.5–6.9 mm. wide near the middle, acuminate, dorsally carinate at the apex, with seven prominent nerves. Labellum much smaller than the sepals and petals,

semiorbicular in outline, sharply 3-lobed in front, 8 mm. long, 11.1 mm. wide across the spreading side lobes; claw minute; lateral lobes relatively large, broadly falcate-triangular with the outer margins rounded, the tips acute and the anterior margins undulate-truncate; middle lobe much smaller, ovate-triangular, scarcely surpassing the side lobes, acutish, concave by reason of folds of the disc at each sinus. Disc with a cluster of digitiform tubercles near the base in front of which there is a semilunate lamella which is tridentate in front and irregularly dentate on the sides. Column short, stout, about 7.5 mm. long.

Maxillaria semiorbicularis appears to be allied to *Camaridium Bradeorum* Schltr., but has smaller leaves, monophyllous pseudobulbs, and different mid-lobe of lip.

The name is in allusion to the shape of the labellum.

COSTA RICA, Province of San José, La Hondura, *Paul C. Standley* 36247, March 2-4, 1924. 1300-1700 metres altitude. "On tree; flowers faded." (TYPE in Herb. Ames No. 29017.)

Maxillaria vagans A. & S. *sp. nov.* Herba caulescens, paullo ramosa. Caulis basibus foliorum arcte imbricantibus omnino obtectus. Pseudobulbi rari, valde complanati, monophylli. Folia oblonga, apice abrupte rotundata. Flores singuli, ex axillis orientes. Perianthium patens. Sepala lateralia oblanceolato-oblonga, acuta. Sepalum dorsale elliptico-oblongum, valde acutum. Petala oblongo-oblanceolata, acuta. Labellum distincte trilobatum, expansum panduratum; lobi laterales parvi, auriculiformes; lobus medius major, subtus carinatus. Columna parva, crassa.

Plant caulescent. Stem stout, entirely invested by distichous closely imbricating sheaths and leaf-bases, with several short branches which are about 7 cm. or less long; the lower portion of the stem (in our specimen) with numerous fibrous, flexuous, glabrous roots. Pseudobulbs of the main stem 6-7 cm. apart, monophyllous, more or less ellipsoid, strongly complanate and coarsely rugose in the dried state, about 3 cm. long. Leaves oblong, spreading; the larger ones 4.6-13.5 cm. long, 1.15-2.6 cm. wide, abruptly rounded

to an obliquely bilobed apex with a minute apicule between the lobes, mid-nerve sulcate above and markedly carinate beneath, slightly narrowed below to a complicate base in the dried specimen; the younger leaves (on the branches) small to minute, 2–26 mm. long, 4–8.5 mm. wide. Inflorescences single, 1-flowered, in the axils of sheaths. Peduncles about 3.5 cm. long, with two loose inflated tubular sheaths. Pedicellate ovary concealed and surpassed by a loose conduplicate sheath which is 12.5 mm. long. Perianth segments apparently spreading. Lateral sepals oblanceolate-oblong, acute on account of a dorsal mucro, 1.7 cm. long, 6 mm. wide, lightly oblique, very slightly narrowed toward the base, 11-nerved (five nerves being more prominent). Dorsal sepal elliptic-oblong, about 1.7 cm. long and 5.8 mm. wide, acute with a very conspicuous dorsal mucro which terminates an apical keel, 7-nerved with several additional inconspicuous nerves. Petals oblong-oblanceolate, about 1.46 cm. long, 5 mm. wide above the middle, acute, 5-nerved. Labellum distinctly shorter than the sepals, 1.2 cm. long, 3-lobed, with the sides erect and apparently conduplicate in natural position; lamina (when expanded) pandurate in outline, about 8 mm. wide across the lateral lobes; lateral lobes small, suborbicular, gradually narrowed toward the base, contracted between them by a fleshy subbilobed transverse callus; middle lobe suborbicular, about 7.1 mm. wide, abruptly dilated from a short broad isthmus, a deep keel beneath especially conspicuous near the apex, margin irregularly crenulate. Column short, stout, arcuate, about 4 mm. long dorsally.

Other imperfect flowers have smaller floral dimensions. *Maxillaria vagans* has the habit of *M. alba* Lindl.

PANAMA, Province of Chiriqui, "Palo Alto," C. W. Powell 348, November 1923. 4500–5000 feet altitude. "Grows in straggling bunches in considerable sunlight. Flowers white, labellum edged with pink, side lobe pink." (TYPE in Herb. Ames No. 27460.)

Ornithidium conduplicatum A. & S. *sp. nov.* Herba crassa. Pseudobulbi magni, ovoidei, monophylli, rugosi.

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Caulis crassus, vaginis foliorum distichis imbricantibus ob-
tectus. Folia ligulata, conduplicata. Flores numerosi, in
axillis foliorum fasciculati. Perianthium campanulatum.
Sepala lateralia lanceolata, acuta. Sepalum dorsale ob-
longo-lanceolatum. Petala obovato-oblonga. Labellum con-
duplicatum, lobis rotundatis, lobo intermedio majore
bilobato. Columna brevis, crassa.



Plant stout, apparently with a creeping rhizome (broken off below). Roots glabrous, fibrous, stout. Pseudobulbs (only one in our specimen) ovoid, about 5.5 cm. long, deeply striate-rugose and shining when dry, monophyllous (the leaf missing), base sheathed with distichous leaf-bases. Stem stout, about 1 cm. in diameter, with a few ascending branches above, mostly concealed by the distichous imbricating leaf-bases. Leaves apparently numerous, ligulate, 10–13.5 cm. or more long, 18–20 mm. wide above when expanded, strongly conduplicate in the dried specimen,

abruptly rounded, minutely bilobed and mucronate at the apex (only two leaves terminating two branches are present). Flowers on slender 1-flowered peduncles which are thickly clustered in the upper leaf-axils. Peduncles 2.3 cm. or more long, entirely concealed by loose imbricating sheaths that are tubular below. Ovary slightly scabrous. Flower small. Sepals and petals slightly fleshy at the tip. Lateral sepals lanceolate, 5.9 mm. long, about 2.5 mm. wide near the base, acute, lightly oblique, somewhat concave at the base, 5-nerved. Dorsal sepal oblong-lanceolate, 5.9 mm. long, about 2 mm. wide, concave, 5-nerved. Petals obovate-oblong, about 5 mm. long, 2.1 mm. wide, acute, often somewhat oblique, 4-nerved. Labellum continuous with the stout column-foot, shorter than the rest of the perianth, quadrate in outline, porrect, 4-lobed when flattened out, about 4 mm. long; lateral lobes erect in natural position, semi-orbicular, contracted above by a transverse fleshy callus extending between the lobes; terminal portion conduplicate in natural position, suborbicular when expanded, about 2 mm. long and 2.6 mm. wide when spread out, sharply divided into two concave rounded lobules. Column very short and stout, 1.75 mm. long dorsally.

Ornithidium conduplicatum has apparently no near allies, but the flower remotely recalls that of *O. fulgens* Reichb. f.

The leaf measurements were taken from the apical leaves on the branches, and, judging by the leaf-sheaths on the main stem, they are evidently much smaller than typical. [Fig. 5: flower and pedicel $\times 12$. 1, column and labellum, in natural position $\times 4$. 2, petal $\times$ about 4. 3, column $\times 7$. 4, lateral sepal $\times 3 \frac{1}{2}$. 5, dorsal sepal $\times 3 \frac{1}{3}$. 6, labellum, front view $\times 6$.]

PANAMA, Province of Chiriqui, Palo Alto Hill, C. W. Powell 341, September-October 1923. 4000-5000 feet altitude. "Grows in much sunlight. . . . The bulbs are bronze when they are mature." (TYPE in Herb. Amcs No. 28138.)

Cryptocentrum gracillimum A. & S. *sp. nov.* Herba pusilla, caespitosa. Caules breves, vaginis foliorum omnino

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obtecti. Folia filiformia, semiteretia ut videtur. Scapi uniflori. Flores pro genere parvi. Sepala similia, lateralibus basi in calcar longum connata, parte libera patenti oblonga vel lanceolata. Petala lanceolata, sepalis superata. Labellum columnae adnatum, lanceolatum. Calcar longum, gracillimum.

Plant very small for the genus, 9-10 cm. tall. Roots numerous, fibrous, flexuous, glabrous. Stems caespitose, very short, 1 cm. more or less long, entirely concealed by distichous imbricating leaf-sheaths. Leaves about five to six, approximate on the upper part of each stem; mature blades 2.7-8.75 cm. long, filiform, semiterete, channelled, about 1 mm. in diameter. Scapes basal, 1-flowered, generally shorter than the leaves, lax, mostly concealed by five to seven long tubular approximate or imbricating sheaths; uppermost sheath much the longest, 1.8-2 cm. long, enclosing the long spur and ovary. Sepals in anthesis widely spreading above, connate below into a tube, free portions with revolute margins. Lateral sepals (free portion when expanded) ligulate-oblong, about 8.1 mm. long, about 2.15 mm. wide, obtuse or acutish, 5-nerved. Dorsal sepal (free portion) oblong-lanceolate, about 8 mm. long, about 2.6 mm. wide, acute, dorsally somewhat carinate near the apex, 5-nerved. Petals lanceolate, about 8.3 mm. long (but appearing shorter than the sepals because inserted much lower down), 1.9 mm. wide below, long-acuminate, the centre traversed by three approximate nerves, the upper portion somewhat fleshy. Labellum apparently adnate to the column; lamina lanceolate, about 7.9 mm. long, 3 mm. wide below the middle, acute, its centre traversed longitudinally by three approximate nerves. Spur formed by the sepals long, slender, 1.4 cm. long, subclavate, parallel with the slightly longer ovary. Column short, stout, about 2.4 mm. long.

Cryptocentrum gracillimum is related to *C. flavum* Schltr., from Colombia, but usually has longer leaves, approximate sheaths on the peduncle, and somewhat larger flowers of different color. The very narrow leaves appear to have been terete or subterete in the living plant. There are no near Central American allies.

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COSTA RICA, Pejivalle, C. H. Lankester 866, May 16, 1924. 2300 feet altitude. Flowers dull olivaceous. (TYPE in Herb. Ames No. 28694.)

Stellilabium distantiflorum A. & S. *sp. nov.* Herba graecillima, aphylla ut videtur. Caules aliquid ramosi. Flores perparvi, distantes, virides. Sepala suborbicularia, eueulata, uninervia, aeuta. Petala oblongo-lanceolata, trinervia, eiliolata. Labellum hastatum, trilobatum, pubescens; lobi laterales basales, minuti, retrorsi; lobus medius ovatus, multo major. Columna quadrilobata.

Plant slender, leafless. Roots fibrous, flexuous, in dried condition stout, flattened and longitudinally sulcate (resembling those of *Taeniophyllum*). Stems long and slender, the tallest exceeding 46 cm. in height (incomplete in our specimens), flexuous-areuate, with several long simple branches, basal portion terete, entire upper part flattened in the dried specimen, about 1 mm. in diameter. Flowers in a very loose raceme on the upper part of the branches, apparently about 11 or 12 mm. apart, about 6 mm. across from tip to tip of the lateral sepals when spread out. Lateral sepals suborbicular, oblique, concave, about 3 mm. long, 2.7 mm. wide, prominently 1-nerved, obliquely acute. Dorsal sepal similar, more strongly cucullate. Petals oblong-lanceolate, 3-nerved below the middle, about 4 mm. long, 1.7 mm. wide, acute, margins finely ciliate. Labellum hastate-ovate, 3-lobed, 3-nerved, finely hairy throughout, margins finely ciliate; lateral lobes small, basal, retrorse, triangular-oblong, obtuse, about 1.1 mm. long and .8 mm. wide at the base; middle lobe ovate, abruptly acute, about 2.5 mm. long, 2 mm. wide across the middle, convex and thickened in the middle, with three clusters of longer hairs in the very middle. Column low, 4-lobed; anterior lobe protruding onto and deeply connate with the labellum, concave within, finely hairy without; side lobes lingulate in outline, obliquely fleshy-thickened, closely adorned with long forking hairs; dorsal lobe lingulate in outline, triquetrous in transverse section by reason of a high fleshy boss, hairy. Pollinia four, complanate-pyriform.

This remarkable plant is probably the species that Schlechter refers tentatively to *Dipterostele minutiflora* (Kränzl.) Schltr. in Fedde Repert. Beihefte 19 (1923) 70. However, it is apparently not the *Telipogon minutiflorus* Kränzl. as described in Ann. Naturhist. Hofmus. Wien 33 (1919) 14. Moreover, Kränzl's description was prepared from poor material, so there is some doubt regarding the exact status of his species. The Costa Rican material differs in several points from the genus *Dipterostele* as erected by Schlechter on an Ecuadorean plant (Fedde Repert. Beihefte 8 (1921) 106), as is indicated in Fedde Repert. Beihefte 19; p. 70.

In floral structure at least *Stellilabium distantiflorum* appears to agree fairly well with *S. astroglossum* (Reichb. f.) Schltr. (Orchideen (1914) 530) based on *Telipogon astroglossus* Reichb. f., which is illustrated in Xenia Orchidacea 1 (1854) t. 7. [Plate 21: habit life size. 1, flower $\times 4$. 2, column and labellum $\times 4$.]

COSTA RICA, Alto de La Estrella, Cartago, C. H. Lankester 582, January 23, 1924. 6000 feet altitude. Flowers "dull oily green." (TYPE in Herb. Ames No. 28119.)

Notylia latilabia A. & S. sp. nov. Herba epiphytica. Pseudobulbi parvi, monophylli, vaginis inclusi. Folia lanceolata vel ligulata, apice rotundata, valde coriacea. Inflorescentiae nutantes. Racemi densiflori. Sepala valde concavo-involuta. Sepala lateralia connata, bidentata, apicibus revolutis. Sepalum dorsale valde fornicatum, angustum. Labellum late trulliforme, acuminatum, basi cum ungue carinatum. Columna generis.

Plant epiphytic, large and stout for the genus. Roots numerous, fibrous, glabrous. Pseudobulbs concealed by large sheaths, monophyllous, about 1.29 cm. long, striate-rugose when dry. Sheaths ovate-lanceolate, about 4.5 cm. long, concave, wasting into fibres in age. Leaf elliptic to lanceolate or oblong; petiole short, stout, conduplicate, about 2 cm. long; blade 11.5–20.5 cm. long, 4–5 cm. wide, spreading, rounded below, apparently acute above but with a rounded obliquely bilobed apex, rigidly and thickly coriaceous, many-nerved, with the mid-nerve more or less sul-

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cate above and conspicuously carinate beneath. Inflorescences nodding, densely many-flowered, about 13–21.5 cm. long. Peduncle stout below, with ovate-triangular cucullate amplexicaul sheaths which are two to five in number. Raceme about 10–15 cm. long, 2–2.5 cm. in diameter in the dried state. Floral bracts very narrowly triangular-lanceolate, nervose, the lower ones subequalling the pedicellate ovaries which are 7 mm. or less long and are reflexed. Perianth widely spreading. Sepals strongly cucullate with involute margins. Lateral sepals connate into a lamina which is bidentate or bifid with strongly reflexed apices; blade when expanded about 8–9 mm. long, about 4 mm. wide in the middle. Dorsal sepal fornicate, when flattened about 9.2–10 mm. long, 2.3–3 mm. wide when unrolled, oblong-lanceolate, acute, with very slightly recurved tip. Petals entirely white, obliquely linear-oblong, 7.6–8.4 mm. long, about 1.6 mm. wide, lightly falcate, complicate-mucronate at the apex. Labellum broadly trulliform, 6.3–7.1 mm. long (including the short claw), 4–4.9 mm. wide near the base, abruptly acuminate, with complicate margins; claw short, about 1 mm. long, with a callose keel above which extends through the lower portion of the lamina, obliquely inserted on the column. Column characteristic of the genus, glabrous, tapering from a stout base, about 4.9 mm. long.

Notylia latilabia is allied to *N. tamaulipensis* Reichb. f., but the flowers are of markedly different color and are apparently larger and have a dissimilar lip. *N. multiflora* Hook. differs from *N. latilabia* in having flowers of a different color, broader petals similar to the sepals, and a narrower lip.

PANAMA, Frijoles, C. W. Powell 406, April 1924. Sea level. Grows in full sunlight, usually on Calabash trees. Flowers: Sepals Orange. Petals white without the orange dot on them characteristic of *N. pentachne* Reichb. f. (Type in Herb. Ames No. 28220.)

Notylia linearis A. & S. sp. nov. Herba pro genere perparva sed floribus grandibus. Folia in basi congesta, equitantia. Pedunculus folia paululo superans. Inflores-

centia subumbelliformis, contracta. Sepala lateralialia lanceolato-linearialia, longe acuminata. Sepalum dorsale et petala anguste lanceolata, caudata. Labellum simplex, lineare, breviter acuminatum, sub medio papillarum fasciculo ornatum. Columna gracilis.

Plant vegetatively very small for the genus, 6.1 cm. tall to the tip of the inflorescence. Roots fibrous, flexuous, glabrous. Leaves five, congested at the base of the plant, equitant, spreading, semielliptic to linear-oblong, 9.5–29 mm. long, 2.5–4.5 mm. wide, more or less oblique, sharply acute, densely rugose when dry, and apparently fleshy in the living condition, articulated to imbricating sheaths with broad scarious margins. Scape about 4 cm. long, emerging from the axil of a sheath, slender, flexuose-suberect, with three remote sheaths which have infundibuliform bases and acuminate apices. Inflorescence an umbelliform raceme, 2.3 cm. long, 3.4 cm. across in the dried plant, apparently semiglobose. Rachis 5 mm. long, densely 13-flowered. Floral bracts narrowly lanceolate, acuminate, concave, horizontally spreading. Pedicels filiform, widely spreading, with the ovary 7–7.5 mm. long. Flowers large for the plant, membranaceous in the dried specimen. Lateral sepals lanceolate-linear, long-acuminate with conduplicate apices, mostly free but very slightly connate at the saccate base, 12.2–13 mm. long, 1 mm. wide below, 1-nerved or indistinctly 2-nerved. Dorsal sepal narrowly lanceolate, caudate-acuminate, strongly conduplicate in natural position, 9.7–10.1 mm. long, 1.8–2 mm. wide below, 3-nerved, conspicuously unicarinate on the back. Petals similar to the dorsal sepal but smaller, 9–10 mm. long, about 1.5 mm. wide below, caudate, 3-nerved in the lower part. Labellum linear, somewhat contracted near the base, 5.5 mm. long, about .9 mm. wide above the middle, short-acuminate, tapering to the carinate tip, 1-nerved, a clump of low approximate papillae near the base. Column slender, about 3.3 mm. long, characteristic of the genus. Anther deeply saccate, complanate-lanceolate-ovoid. Stipe of the pollinia strongly triangular-dilated above.

Notylia linearis is closely allied to *N. bicolor* Lindl., *N. ramonensis* Schltr., and *N. coffeicolor* Schltr., but differs from all in its entire linear lip.

COSTA RICA, La Fuente, East Turrialba, *Anastasio Alfaro s. n.*, September 2, 1924. 1150–1200 metres altitude. "Sepal green, silver inside; petals purplish with red spots." (TYPE in U. S. Nat. Herb. No. 1205899.)

***Brassia parviflora* A. & S. sp. nov.** Herba mediocris sed floribus parvis. Radices crassae. Folia in basi congesta, imbricantia, disticha, vaginis conduplicatis articulata; lamina lanceolato-oblonga, breviter acuminata. Scapus quam folia multo brevior. Bractae racemi pauciflori ovaria pedicellata superantes. Sepala lateralia lanceolato-linearia. Sepalum dorsale anguste lanceolatum. Petala oblique lanceolato-oblonga. Labellum elliptico-lanceolatum, dimidio inferiore carinis binis conspicuis ornatum.

Plant caespitose, medium-sized but with very small flowers, about 35 cm. tall to the apex of the erect leaf. Roots very stout, fibrous, 2–2.5 mm. in diameter. Pseudobulbs apparently lacking. Leaves crowded at the base, densely imbricated, distichous, articulated to membranaceous conduplicate striate-nervose sheaths; blade lanceolate-oblong, 8–27.6 cm. long, 14–29.5 mm. wide (the outer blades successively smaller with the outermost very small), short-acuminate above, slightly narrowed to a conduplicate base or very gradually narrowed to a channelled petiole. Inflorescence half the length of the larger leaves. Peduncle below the raceme 13–14 cm. long, lower half concealed by the leaf-sheaths, exposed upper half with one or two loose tubular scarious sheaths. Rachis 5.2 cm. or less long, 3- to 5-flowered. Floral bracts conspicuous, lanceolate, the lowermost 1.9–2.1 cm. long, much surpassing the pedicellate ovary, acuminate, conduplicate, scarious, nervose. Flowers very small for the genus. Lateral sepals lanceolate-linear, with recurved apices, 1.76 cm. long when extended, 2.1 mm. wide near the base, gently falcate, 1- to 3-nerved, fleshy in the longitudinal middle, and subcarinate dorsally. Dorsal sepal narrowly lanceolate, 1.41 cm. or more long, 2.8–3 mm. wide,

acuminate, rather fleshy, 3-nerved. Petals obliquely lanceolate-oblong, 1.15–1.32 cm. long, 2.6 mm. wide, acuminate, 3-nerved. Labellum elliptic-lanceolate with the upper portion recurved, 1–1.1 cm. long, about 4.5 mm. wide across the middle, complicate-acute at the apex, dorsally carinate at the tip. Disc,—on its lower half,—with a pair of approximate high fleshy pubescent keels which are about 5 mm. long; near the apex of each keel there is an outwardly-leaning tooth. Column short, stout, about 5 mm. high at the back, toward its base with a pair of broad porrect semiovate wings which surround the base of the lip-keels.

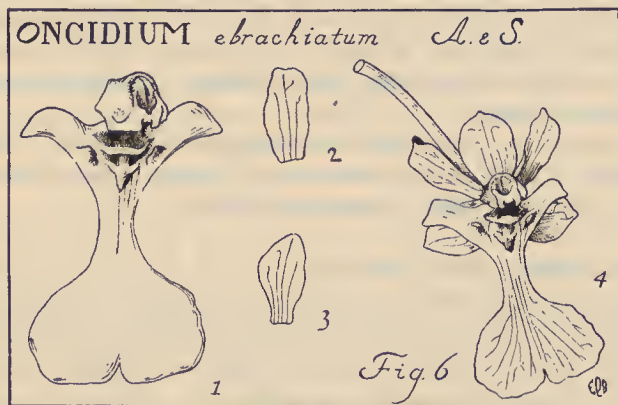
Brassia parviflora is a close ally of *B. chlorops* Reichb. f., judging by the description of the latter. It is separable, however, in that the peduncles are much shorter than the leaves and the prominent floral bracts much surpass the pedicellate ovaries.

COSTA RICA, Cascajal, *Anastasio Alfaro s. n.*, October 24, 1924. 1700 metres altitude. Flowers green with dark spots. (TYPE in Herb. Ames No. 29010.)

***Oncidium ebrachiatum* A. & S. sp. nov.** Planta mediocris. Pseudobulbi minuti, monophylli. Folia teretia, canaliculata. Inflorescentia laxa paniculata, quam folium brevior. Flores flavi. Sepala lateralia oblique obovata, obtusa. Sepalum dorsale suborbiculare, valde concavum, apice rotundatum. Petala oblonga vel obovato-oblonga, apice valde truncata. Labellum trilobatum, lobi laterales oblongi, apice falcato in isthmum sensim angustatum; lobus medius flabellato-reniformis, profunde bilobatus; discus basi quadricarlosus. Columna ebrachiata.

Roots fibrous, numerous, longitudinally sulcate when dry, minutely puberulent. Pseudobulbs minute, monophyllous, concealed by sheaths, about 5 mm. long and 6.5 mm. in diameter. Leaf terete and longitudinally grooved, 4.1 dm. or more long, 8–10 mm. wide in the dried state, base (together with the peduncle) clasped by several imbricating fibrous sheaths. Inflorescence flexuose-erect, loosely paniculate, shorter than the leaf, about 34 cm. long. Peduncle glabrous, with five small scariosous tubular sheaths which ter-

minate at base in a narrow black band. Panicle with approximately seven short ascending branches which are 1.8 (rarely .6) -3.7 cm. long. Floral bracts minute, triangular, concave. Flowers very small. Lateral sepals free, obliquely obovate, about 4.1 mm. long, 2-2.2 mm. wide, subunguiculate-narrowed below, obtuse above, and dorsally carinate near the apex. Dorsal sepal suborbicular, 3.1-3.5 mm. long, about 2.5 mm. wide, strongly concave, rounded at the apex, with an indistinct dorsal apicule, slightly narrowed toward the base. Petals oblong to obovate-oblong, oblique, about 4 mm. long, 2-2.15 mm. wide, abruptly and broadly trun-



cate, somewhat narrowed toward the base. Labellum about 8 mm. long, deeply 3-lobed; lateral lobes retrorse, oblong, falcate toward their apex, gradually narrowed to the slender but short isthmus; isthmus about 1.2 mm. wide, flabellate-dilated into the anterior lobe; middle lobe flabellate-reniform, 6-6.8 mm. wide, rather deeply bilobed but the lobes contiguous. Disc minutely papillose throughout, at the base a broad transverse keel in front of which are three small calli, the middle one of which is largest and subtrilobed. Column very short and stout, about 1.1 mm. long dorsally, with only rudimentary processes instead of wings.

Oncidium ebrachiatum appears very similar to *O. teres* A. & S., but the lip is differently shaped, the callus very

dissimilar, and the column nearly ebrachiate. [Fig. 6: 1, labellum and column, front view $\times 4$. 2, petal $\times 2 \frac{2}{3}$. 3, lateral sepal $\times 3$. 4, flower, front view $\times$ about 3.]

PANAMA, Cana and Vicinity, *R. S. Williams* 975, April 4, 1908. 2000–6500 feet altitude. Flowers yellow. (Type in Herb. Ames No. 10748.)

***Oncidium panduriforme* A. & S. sp. nov.** Herba pro genere mediocris, caespitosa. Radices crassae. Folia in basi congesta, lineari-oblonga, vaginis imbricantibus articulata. Inflorescentia paniculata; rami rari. Flores parvi. Sepala lineari-oblonga, acuta, lateralia valde carinata. Petala latoria, oblongo-lanceolata. Labellum panduriforme; discus in basi callo crasso obscure tricarinato ornatus. Columna ebrachiata.

Plant caespitose, medium-sized for the genus, more than 60 cm. tall to the upper part of the inflorescence (incomplete). Roots fibrous, very stout, larger above the basal part, glabrous. Leaves congested at the base, linear-oblong, 14.8–39.9 cm. long, 1.95–2.7 cm. wide; the outer smaller, articulated to distichous imbricating conduplicate sheaths; the outermost sometimes 4.4 cm. long, 1.5 cm. wide; all the leaves acute or acuminate at the apex, which is inconspicuously and obliquely bilobed, commonly gradually tapering toward the base, chartaceous, many-nerved with seven to nine nerves conspicuous beneath. Inflorescence paniculate, much surpassing the leaves. Peduncle up to the panicle apparently a little shorter than the leaves, somewhat laterally flattened, with about three remote tightly clasping infundibuliform sheaths which are 8–10 mm. long. Panicle 31.8 cm. or more long, with branches (often bi- or tri-furcate) 2.7 (rarely)–8.1 cm. apart. Rachis very loosely flowered, more or less fractiflex. Flowers small, about 2 cm. in diameter; perianth segments spreading, subfleshy (except the labellum), and indistinctly nerved. Lateral sepals linear-oblong, free to the base, about 10.7 mm. long, 2 mm. wide, acute, narrowed below, with a conspicuous fleshy keel on the outer side increasingly prominent toward the apex, slightly oblique. Dorsal sepal similar, linear-oblong, about 11.2 mm. long,

2.5 mm. wide, conspicuously complicate-acute, dorsally carinate (only near the tip), 3-nerved. Petals broader, oblong-lanceolate, 10–11.5 mm. long, 3.4–3.8 mm. wide, conspicuously complicate-acute and dorsally carinate at the apex, 5-nerved. Labellum pandurate in outline, 9.5 mm. long, 5.2–6 mm. wide near the base, about 6.8 mm. wide across the anterior third; basal portion quadrate-triangular, with a rounded subcuneate base, then gradually constricted; anterior portion abruptly dilated, transversely oval, broadly rounded in front with an abrupt apicule from the dorsal keel which is at the apex. Disc with a fleshy indistinctly tricarinate callus at the base, often with a shorter keel on each side. Column short, about 5 mm. long at the back (longer in front), wingless, but with a pair of conspicuous shallowly-triangular dilations on the anterior basal portion.

Oncidium panduriforme is apparently without any close allies.

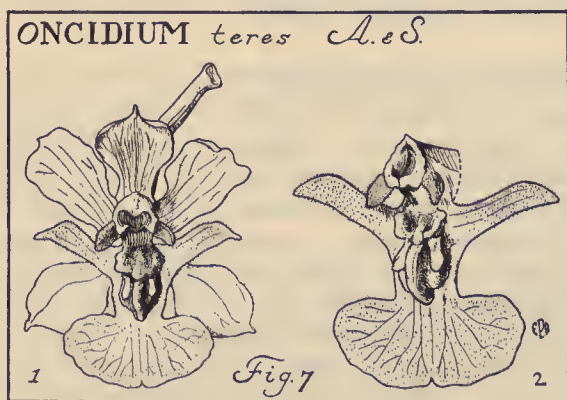
COSTA RICA, Cachi, *Anastasio Alfaro s. n.*, August 16, 1924. Lip white. (TYPE in U. S. Nat. Herb. No. 1205933. DUPLICATE TYPE in Herb. Ames No. 29015.)

Oncidium teres A. & S. *sp. nov.* Herba mediocris. Radices fibratae. Pseudobulbi subnulli, monophylli. Folium longum, teres, canaliculatum. Inflorescentia folio brevior, paniculata. Flores flavidi, brunneo signati. Sepala lateralia oblique obovata, apiculata. Sepalum dorsale obovato-spathulatum, acutum, valde concavum. Petala obovato-oblonga, abrupte et late truncata. Labellum trilobatum; lobi laterales retrorsi, ligulati; lobus medius unguiculatus, abrupte reniformi-dilatatus. Discus basi callo lobato ornatus. Columna brachiis binis, oblongis et incurvis.

Roots fibrous, flexuous, glabrous, numerous. Pseudobulbs minute, monophyllous, 3–3.5 mm. long, 5 mm. or more wide. Leaf fleshy, terete, longitudinally channelled or sulcate, about 35.6 cm. long, 1 cm. across before drying, invested at base (together with the pedicel) by several triangular imbricating scarious sheaths the upper of which are successively larger. Inflorescence shorter than the leaf, paniculate, about 26.5 cm. long (several panicles broken off

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below indicate greater length). Peduncle below the inflorescence with about five inconspicuous scarious infundibuliform sheaths terminating at their base in a black-banded joint, about 1.5 mm. in diameter. Panicle with four to seven widely spreading branches which sometimes fork. Floral bracts minute, triangular, concave. Flowers small. Lateral sepals free, very obliquely obovate, about 6.5 mm. long, 3.2–3.6 mm. wide, apex rounded and abruptly apiculate, gradually narrowed to a subunguiculate base, concave. Dorsal sepal obovate-spatulate, about 5.9 mm. long, 3.9 mm. wide above, acute, strongly concave. Petals obovate-



oblong, 5.2–5.9 mm. long, 3.15 mm. wide in the middle, abruptly and obliquely truncate at the apex with a minute apicule, somewhat narrowed toward the base, margins rather undulate. Labellum distinctly 3-lobed, 7–7.5 mm. long; lateral lobes small, ligulate, retrorse, abruptly subfalcate or nearly straight near the acute or obtuse apex, densely and finely pubescent especially above the base; middle lobe very abruptly dilated from an isthmus 2–3 mm. long into a reniform lamina which is 6.8–7.8 mm. wide, inconspicuously bilobed in the middle, and finely and densely pubescent; callus basal, large, fleshy, divided into two equal portions,—the posterior 3-lobed with the lateral lobes largest,—the anterior subquadrate-subtrilobed in outline,

with its strongly and abruptly elevated centre extending to the mucronate obtusish apex and with a porrect-spreading finger-like tubercle on each side of its very base. Column short, finely pubescent above, about 2.8 mm. long, with a pair of oblong fleshy incurved shortly-pubescent wings.

Oncidium teres is closely allied to *O. ascendens* Lindl., but has smaller flowers, ligulate side lobes of lip, and truncate petals. [Fig. 7: 1, flower, front view $\times$ about 3. 2, labellum and column, front view $\times$ about 4.]

PANAMA, Province of Veraguas, San Francisco, C. W. Powell 383, February 1924. 1000 feet altitude. "Grows in sunny locations. Flowers yellow trimmed with brown." (TYPE in Herb. Amcs No. 27950.)

***Lockhartia triangulabia* A. & S. sp. nov.** Caulis foliis dense imbricantibus omnino obtectus. Folia disticha, equitantia, leviter falcata. Inflorescentiae duae ut videtur, subapicales, axillares. Sepala lateralialia ovalia, mucronata. Sepalum dorsale ovatum, mucronatum. Petala oblongo-ovata vel oblongo-elliptica, apice rotundata. Labellum in circuitu late quadrato-triangulare, quinquelobatum; lobi basales triangulari-lanceolati, retrorsi; lobi intermedii breves, triangulares; lobus terminalis quadratus, bilobatus.

Plant more than 25.3 cm. tall (broken off below). Stem completely concealed by imbricating leaves and leaf-bases. Leaves distichous, equitant, up to 2.7 cm. long on the lower edge and 6 mm. wide near the base, lightly falcate-incurved, obliquely acute, subcoriaceous; the upper leaves gradually smaller and the ten to twelve uppermost suddenly decreasing in size (about 11 mm. long, 3.5 mm. wide). Inflorescences arising from two of the upper leaf-axils, paniculate. Rachis about 1.5 cm. long. Peduncle and pedicels with small cordate nervose bracts. Flower small membranaceous when dry. Lateral sepals oval, 5.4 mm. long, 3.1 mm. wide, more or less oblique, rounded at the apex, 5-nerved, dorsally mucronate at the tip. Dorsal sepal ovate, 5.4 mm. long, about 3 mm. wide below, dorsally mucronate at the tip, 4-nerved. Petals oblong-ovate, about 5.4 mm. long, 3 mm. wide, narrowed toward the base, broadly rounded at the

apex with a subacute point, 3-nerved. Labellum broadly quadrate-triangular in outline, 5-lobed with the terminal lobe bilobed, about 7.2 mm. long and 1 cm. broad at base when expanded; basal lobes retrorse, triangular-lanceolate, oblique, up to 4 mm. long on the posterior margin, rounded at the apex; intermediate lobes short, triangular, spreading, acute; terminal lobe quadrate, with nearly parallel sides, deeply bilobed, about 3.2 mm. long. Disc provided with a basal linear-oblong callus which is thick at its base, thinner in its central portion, and fleshy much-thickened in its anterior part, and with two callose teeth on each side of and in front of the callus. Column short, extended on each side into two spreading suborbicular inconspicuously denticulate wings.

In the structure of the labellum *Lockhartia triangulabia* appears to be unique. The subfalcate shape of the leaves is also unusual.

PANAMA, Province of Chiriqui, C. W. Powell 362a. 4000-5000 feet altitude. (TYPE in Herb. Ames No. 28193.)

***Lockhartia variabilis* A. & S. sp. nov.** Herba humilis, variabilis. Caulis basibus foliorum imbricatis omnino obtectus. Folia disticha, scapelliformia, leviter falcata, obtusa. Flores flavi, in sicco membranacei. Sepala elliptico-lanceolata, mucronata. Petala elliptica, latiora, acuta. Labellum in circuitu quadratum, basi rotundatum, medio rhombico-dilatatum, deinde angustatum, apice bilobatum; discus basi callosus. Columna late alata.

Plant low for the genus, 14 cm. tall to the apex of the uppermost leaf. Roots fibrous, glabrous. Stem compressed, entirely concealed by imbricating leaf-bases. Leaves distichous, equitant, scapelliform, slightly spreading-falcate, narrowed to an obtuse apex, up to 3.35 cm. long on the lower margin, 2.6-6.5 mm. wide near the base (the lowest leaves not 2 cm. long, 4.5 mm. wide). Inflorescences apparently single in the axils of the two uppermost leaves. Flowers membranaceous when dry. Lateral sepals elliptic- or oblong-lanceolate, 3.9-4.9 mm. long, about 2 mm. wide below the middle, 1- or 3-nerved, mucronate. Dorsal sepal similar.

Petals slightly larger than the sepals, elliptic to suborbicular, acute, 4.1–5 mm. long, 2.4–3.2 mm. wide, 3-nerved. Labellum quadrate in outline, 7.1–8.1 mm. long, 4.9–6.4 mm. wide across the middle, deeply bilobed at the apex; lamina rounded at base, more or less rhombic-dilated in the middle, then narrowed and more or less dilated into two anterior subquadrate lobes; basal callus conspicuous, oblong to ovate-oblong, margin raised and finely papillose, depressed within and provided in the centre with a rounded boss. Column short and stout, with a pair of spreading rounded-triangular wings, adherent to the basal part of the lamina of the labellum. Pollinia pyriform, somewhat complanate.

One flower from the type specimen, in addition to being markedly smaller, has the sides of the lip not so sharply dilated and narrowed. A second collection (*Powell 361*) is a much narrower leaved plant, the leaves all less than 3 cm. long and 2.6–4 mm. wide near the base. A vegetatively intermediate caespitose plant (*Powell 372*) has a very slightly indented labellum and indistinct (possibly incomplete) column-wings. A caespitose plant (*R. S. Williams 1008*) reaching 19 cm. in height is apparently the same species, but it has no flowers.

Lockhartia variabilis is a very variable species allied to *L. Pittieri* Schltr., from which it differs in the lip, which is relatively much longer than the sepals and petals. It is separable from *L. parthenoglossa* Reichb. f. by its narrower sepals, its elliptic petals, and rounded column-wings, as well as by its narrower leaves.

PANAMA, Wooded hills near Frijoles, *C. W. Powell 355*, January–February 1924. Sea level. Grows in medium shade. Flowers yellow with an orange boss at base of lip. (TYPE in Herb. Ames No. 28131.): Cativa-Porto Bello Trail, *C. W. Powell 361*: Ft. Sherman and mouth of Chagres River Trail, *C. W. Powell 372*, January 1924. "Found growing on mossy limbs in medium sun.": Marraganti and Vieinity, *R. S. Williams 1008*, April 3–9, 1908. 10–200 feet altitude. "Fls. yellow, lip with red centre."

Dichaea verrucosa A. & S. *sp. nov.* Caules penduli, dense distichifolii. Folia parva, oblongo-elliptica, patentia. Flores singuli ut videtur, breviter pedicellati, pro herba grandes. Sepala petalaeque similia, lanceolato-ovata, valde concava, dorso subdense muricata. Labellum late rhombicum, ancoraeforme, apiculatum vel acutum, medio utrinque cum lobulo lineari retrorso. Columna brevis, cum ligula infrastigmatica lineari.

Stems exceeding 13.2 cm. in length (incomplete in our specimens, but apparently long and pendulous), densely leaved, entirely concealed by imbricating leaf-sheaths. Leaves very numerous, distichous, not articulated; blades spreading, elliptic or oblong-elliptic, 9 (rarely 8)–12.5 mm. long, 4–6 mm. wide, apically rounded with a caducous apicule. Peduncle short, 1-flowered, subequaling the leaves, axillary, filiform, spreading. Floral bracts minute, two in number; one shallowly infundibuliform, membranaceous and abruptly apiculate; the other within the first, rigid, obliquely ligulate and acuminate. Ovary short, densely papillose-muricate with longer papillae above, enveloped by the outer bract. Flower large for the plant; perianth segments connivent, rather fleshy. Sepals and central part of petals subdensely muricate without, all concave. Lateral sepals lanceolate-ovate, 9.1–10.6 mm. long, 3.9–5.8 mm. wide, acuminate, subcarinate above, 7-nerved (indistinctly 8-nerved), lightly oblique. Dorsal sepal 10–11.9 mm. long, about 5 mm. wide below, 9-nerved, similar to the lateral sepals. Petals similar to the sepals, 8.6–10.9 mm. long, 4.2–4.9 mm. wide, dorsally carinate at the apex, lightly oblique, 7-nerved with a faint short outer nerve on each side. Labellum broadly rhombic in outline, anchor-shaped, concave, 7.1–8 mm. long including the short quadrate claw, basal margins rounded and densely long-ciliate; lamina abruptly dilated into a pair of linear-lanceolate retrorse obtuse lobules which are about 2.5 mm. long, anterior portion in natural position rounded and apiculate (by reason of the incurved sides),—when expanded rounded-triangular and acute,—11–12-nerved. Column very short, with a conspicuous ligulate pubescent infrastigmatic appendage.

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Dichaea verrucosa is unusual on account of its dorsally muricate sepals and petals. The only one of its allies with this characteristic apparently being *D. suaveolens* Kränzl., which, however, has much-branched stems, smaller and much narrower leaves, obovate-oblong petals, and differently colored flowers. *D. muricata* (Sw.) Lindl. is superficially very similar, but has smaller flowers, narrower petals, and apparently lacks the ligulate column-appendage.

COSTA RICA, La Fuente, Peralta, C. H. Lankester 918, September 1923. 3800 feet altitude. Sepals and petals hyaline spotted "dark violet," margin of lip frontally stained violet, rest heavily blotched with violet, sepals exteriorly rugulose. The young leaves are mucronate. A common and beautiful species. (TYPE in Herb. Ames No. 28692.)

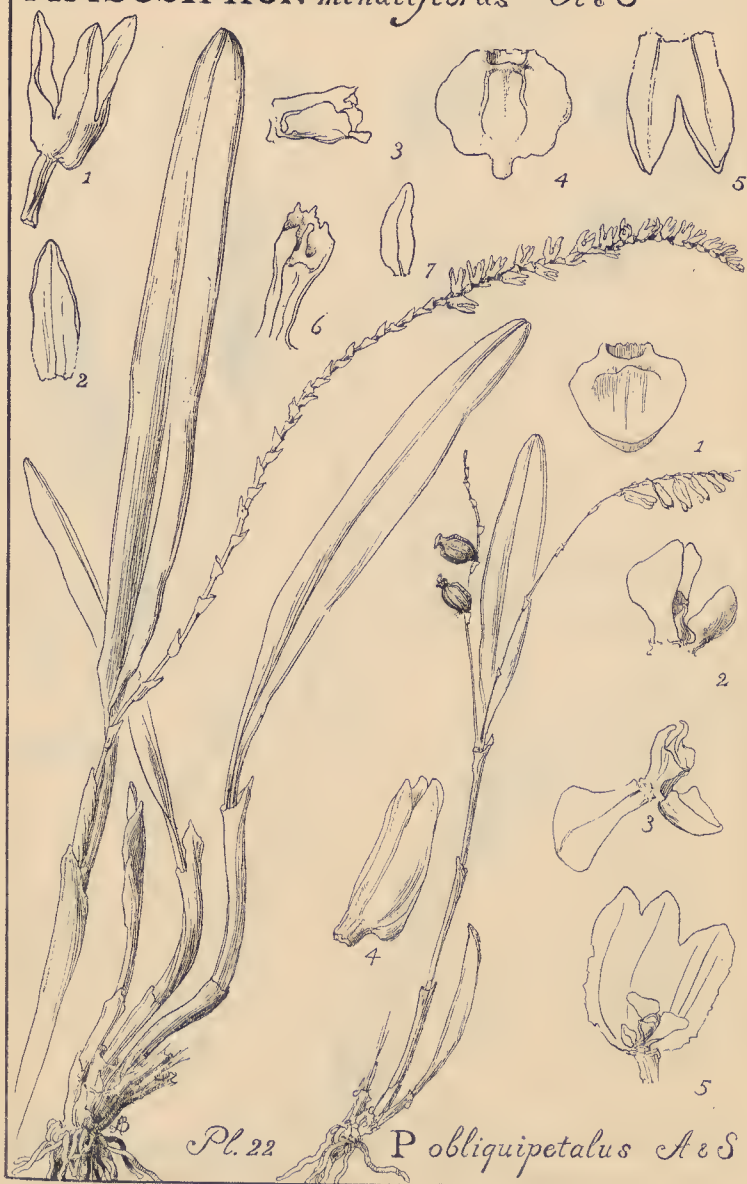
STELLILABIUM

Distantiflorum A & S



STENORRHYNCHUS *bracteosus* A & S

PHYSOSIPHON *minutiflorus* A & S



PLEUROTHALLIS

parvula A. & S.



MALAXIS

pusilla
A. & S.



LEPANTHES

ovata A. & S.

Pl. 23

E. ramosissimum A. e S.

Pl. 24



EPIDENDRUM erosum A. e S.

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